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MR. PRESIDENT AND GENTLEMEN,—It is my first duty and pleasure to acknowledge the honour conferred upon me by my colleagues in selecting me to deliver this lecture, the very title of which is evidence of the marvellous progress which the science and art of surgery has made during my lifetime. When I became a Member of this College the surgery of the heart did not exist. No surgeon had operated on the heart itself, though a few attempts to evacuate pericardial effusions had been recorded. A wound of the heart was considered by the ancients as surely fatal and this opinion was endorsed by the faculty. It has been pointed out, however, that "the great dramatic poets did not seem to attach a definite fatality to wounds of the heart, for they made their suicides kill themselves in other ways."[1]

HEART WOUNDS IN THE CLASSICS.

Suicides in tragedy sometimes hang themselves, but Ajax falls on his sword (he was always a feckless fellow). The narrative[2] is not quite clear, as his wife, who tells it, is naturally scared, and seems to have confused a sword with a spear; but he died at once with such a gush of blood at the nose that she covered him up with a cloak, for fear anyone else should see him; there was hæmorrhage from the wound too. His brother, Teukros, later on, says it was a sword, and he ought to know!

Ovid[3] writes: "Sanabit nulla vulnera cordis ope," and, unlike most of his references to the human heart, which deal with breakages rather than repairs, this line really refers to medical treatment, or rather to the impossibility of doing anything in a remedial way to heart wounds.

Celsus,[4] a contemporary of Ovid, gives the signs of a lingering death: "The heart being wounded, blood escapes in abundance, the pulse vanishes, there is extensive pallor, there occur cold and malodorous drops of sweat all over the body, the extremities become cold and death follows."

The special sign, that of movement of the weapon with the heart beat, was noted by Homer:[5] "And the hero, Idomeneus, smote him (Alkathous) in the midst of the breast with the spear. And he fell with a crash, with the lance fixed in his heart that, still beating, shook the butt-end of the spear."

"He fell, the spear point quivering in his heart,
Which, with convulsive throbbing, shook the shaft."[6]

The sudden death following the withdrawal of the penetrating weapon occurred to Epaminondas at the battle of Mantinea (B.C. 363):—

"At last, while he was most heroically exerting himself to gain the victory for his country he received a mortal wound in his breast by a dart thrown with such force that the wood broke and the iron remained in his body and he fell to the ground. And Epaminondas, yet living, was brought to the camp; and when the physicians who were sent for told him that he would certainly die as soon as the dart was drawn out of his body, he was not at all daunted; but first calling his armour-bearer he asked whether his shield was safe. The armour-bearer said it was and showed it to him. Then he enquired which side had won the day. The youth made answer that the Bœotians were the victors. 'Why, then,' said he, 'now is the time to die,' and forthwith ordered the dart to be drawn out, and so upon the drawing out of the head of the dart he quietly breathed his last."[7]

Again, Homer[8] narrates the story of the wounding of Sarpedon by Patroklos with a javelin "where the midriff clasps the beating heart." Sarpedon fell as falls an oak—"and from him Patroklos drew out his spear point and the life together." Sarpedon, addressing his friends when wounded, said:—

"Defend my body, conquer in my right
That taught by great examples, all may try
Like thee to vanquish, or like me to die."

He ceased—

"The insulting victor with disdain bestrode
The prostrate prince, and on his bosom trod;
Then drew the weapon from his fainting heart,
The reeking fibres clinging to the dart.
From the wide wound gushed out a stream of blood;
And the soul issued in the purple flood."

Nowadays we should take measures by exposure of the heart, &c., to prevent hæmorrhage when the missile or weapon was withdrawn, though it does not seem very long ago that the withdrawal of a file from the Austrian Empress's heart ended in sudden death (September, 1898).

HEART WOUNDS IN EARLY MEDICAL LITERATURE.

Riolanus[9] (1649) less than 300 years ago opens his chapter on the heart with these words:—

"The heart is the chief and most noble organ in the body. It is the source of that life-giving nectar by the influx of which the vitality of each part of the body is renewed and cherished. The organ which is the first to be born and the last to die, and through which all other parts of the body live and move and have their being."

Other authors of this period use much the same language. Ambrose Paré[10] (1691) writes:—

"The heart is the chief mansion of the soul, the organ of the vital faculty, the beginning of life, the fountain of the vital spirits, and so consequently the continual nourisher of the vital heat, the first to live and the last to die."

Paul Barbette[11] (1687), of Amsterdam, a contemporary of Ambrose Paré, writes as follows:—

"Wounds of the heart are always mortal and those that penetrate into the left ventricle kill suddenly. Those so wounded seldom live above 6, 12, or 20 hours, although there are examples produced to the contrary. A wound in the right ventricle permits the patient to live longer, and one which terminates in the substance of the heart grants yet longer time."

[1] Fischer: Arch. f. Klin. Chir., 1868, Bd. ix.
[2] Sophocles, "Ajax," 22,898 ff.
[3] Epistolæ ex Ponto I., iii., 17-26:—
"Non est in medico semper, relevetur ut æger;
Interdum docte plus valet arte malum.
Cornis ut e molli sanguis pulmone remissus
Ad Stygias certo limite ducat aquas.
Adferat ipse licet sacras Epidaurius herbas;
Sanabit nulla vulnera cordis ope.
Tollere nodosam nescit medicina podogram;
Nec formidatis auxiliatur aquis.
Cura quoque interdum nulla medicabilis arte,
Aut ut fit, longa est extenuanda mora."
[4] V. 26 (8).
[5] Iliad XIII., 442, translated by Lang, Leaf, and Myers, p. 259.
[6] Lord Derby's translation.
[7] Diodorus Seculus (B.C. 40) translated by Booth, Book xx., Chap. x., p. 69.
[8] Iliad XVI., 585-625 (Pope's translation).
[9] Cap. 8. Cor est viscus primarium et nobillissimum totius corporis, fons nectaris vivifici cujus influxu vitalitas singularum partium recreatur atque fovetur; quod primum nascitur, et ultimum moritur, cujus beneficio vivunt et subsistunt omnes corporis partes.
[10] The Works of Ambrose Paré, p. 95.
[11] The Surgical Works of Paul Barbette, 1687, p. 174.

Cabriolanus[12] (1604) mentions a case in which he found a scar and another in which he found an unhealed wound in the heart. He agrees with Fernelius that the heart can suffer a solution of continuity without death ensuing; and, he adds, lest anyone should think that these heart lesions were the cause of death, that both those persons were hanged.

Tourby,[13] in 1642, did an autopsy on a man who, four years previously, had had a sword-thrust in the chest which caused a wound of the heart near the apex; the evidence of which was a cicatrix that could be demonstrated to all present.

In the succeeding centuries there is little to note till the time of Bonetus[14] and Morgagni.[15] They established two facts: (1) That wounds of the heart were not necessarily immediately fatal; (2) that a sudden effusion of blood into the pericardium arrested the heart's action.

Bonetus relates the case of a young man, aged 24, who bravely sustained an attack by seven others, but was at length wounded by a sword-thrust. He survived five days. There was a wound of the left lung and of the right ventricle of the heart.

Morgagni compares two cases of heart wound. In one there was a free opening in the pericardium and the blood escaped freely externally. This case lived eight days. In the other the blood was retained in the pericardium and the patient died in a few minutes. He points out that the second case did not die from hæmorrhage, but from pressure on the heart. Thus, a hæmorrhage within the pericardium is much more quickly fatal than a hæmorrhage in most other places, even though it be far less in amount.

Interesting cases of heart injury abound in literature. A few may be quoted:—

1. Ambrose Paré thus describes a case: "When I was in Turin I saw a certain gentleman who in a duel received a wound under his left breast which pierced into the substance of the heart; yet for all that he struck some blows afterwards, and followed his flying enemy some 200 paces, when he fell down dead upon the ground. Having opened the body I found a wound in the substance of the heart so large as would contain one's finger. There was much blood poured forth upon the midriff." (Query: Did the gentleman die of auricular compression?)

2. A pointed piece of stick was found in a pig's heart. The swineherd stated than more than six months previously he had prodded the unruly animal with the stick he used for driving his pigs.[16]

3. A boy in 1834 lived five weeks and two days after a gunpowder explosion, which blew a piece of wood into his chest. At the post mortem a piece of wood 3 inches long and as thick as a cedar pencil was found in the right ventricle.[17]

4. A man, aged 50 years, died in hospital in 1825. Nine years previously he was wounded by a knife thrust into the left side of the chest. The edges of the pericardial wound were adherent to the chest wall and a firm fibrous cicatrix was found going through the whole thickness of the right ventricle in a line corresponding to the wound of the pericardium.[18]

5. In 1827 a medical student in Paris was stabbed in the left chest. (He came under the care of Dupuytren.) A jet of blood, as large as a pea, and air came from the wound. The flow of blood increased when the patient groaned. He recovered in 28 days. The treatment was mainly by bleeding.[19]

[12] Alphabeticum Anatomaken, Obs. 26 (1604).
[13] Quoted from Jamain des Plaies du Cœur (loc. infra cit.).
[14] Sepulcretum Lib. N. Add., Obs. 3, 1700.
[15] De Sedibus et Causis Morborum, Ep. 53 (3), and 63 (4 and 5), 1730.
[16] Quoted from Jamain des Plaies du Cœur. Thèse de Paris, 1857. Ref. given Hen. ab. Heers Obs. Med. Lib. 1, p. 110, 1647.
[17] Trans. of Prov. Med. and Surg. Association, 1834, ii., p. 357.
[18] Velpeau: Traité de Anat. et Chir., 2nd edition.
[19] Samson: Thèse de Paris, 1827.

Dupuytren's advice in these and similar cases was to go on bleeding as often as the pulse revived and only to leave sufficient blood to keep the patient alive. This recommendation reminds one of Dr. Sangrado in "Gil Blas." He believed that it was a mere vulgar error that the blood was of any use to the system—according to him, the faster you draw it off the better. Sangrado despatched business so fast that the fraternity of notaries who made wills in Valladolid in his time found half their jobs spoiled as they could not keep pace with him. The difference between the great French surgeon and the charlatan Sangrado is obvious. Depuytren's case recovered, but no patient of Sangrado's was ever known to do so! For "Mere prattle ..... was all his soldiership."[20]

We may conclude, then, that in wounds of the heart a free external hæmorrhage is less dangerous than a sudden filling of the pericardium with blood. Wounds of the heart, too, under some circumstances do not allow the continued escape of blood. They close and heal as do certain wounds of the great arteries.

Mr. Mansell Moullin showed a case at the Clinical Society in 1897.[21] The man had received a severe blow from the point of an elbow on the third left costal space in a football match. Twenty-five days later, when the patient was in extremis, the pericardium was opened in the left fifth costal space, and a drainage-tube was inserted. In three hours six pints of thin dark fluid escaped through the drainage-tube. This case was one of rupture of the heart without external wound, and slow accumulation of blood in the pericardial cavity occurred. In the same volume of the Clinical Society's Transactions a case of punctured wound of the right ventricle is narrated by Mr. W. G. Spencer.[22] There was considerable external hæmorrhage on the eighth and seventeenth days. Death occurred on the seventy-ninth day. There was a healed wound of the wall of the right ventricle, which was adherent to the scar in the pericardium.

ATTITUDE OF NINETEENTH CENTURY DOCTORS ON HEART SURGERY.

Remarks of well-known surgeons and physicians of the nineteenth century showing that surgery of the heart itself was considered a hopeless matter down to quite recent years.

Guthrie[23] writes:—

"London, the great metropolis of the British Empire, with its 2,000,000 of inhabitants has been nearly exempt from injuries of the heart. There is not at the present moment a surgeon of any of its largest hospitals who has seen or recollects a case of recovery after a wound of the heart, either in his own practice or in that of his colleagues or predecessors. They have rarely seen a case brought to them alive for treatment, sensible people not being disposed to stab each other, while madmen try to kill themselves in a different way."

Sir Thomas Watson[24] writes:—

"If the patient is in danger of perishing from the amount of the pericardial effusion the *ultimum remedium* of tapping the distended bag must be adopted. The puncture should be made with a fine trocar after a preliminary incision of the skin through the inner end of the fourth left intercostal space. I have never seen this done nor met with any case in which it appeared to be demanded; but it has been done with great present relief to the patient."

[20] "Othello," Act I., Scene I.
[21] Clin. Soc. Trans., vol. xxx., p. 217.
[22] Clin. Soc. Trans., vol. xxx., p. 2.
[23] Lectures on Some of the Most Important Points in Surgery, Part III., p. 50, published 1848.
[24] Lectures on the Principles and Practices of Physic, 5th edition, 1871, p. 357.

Billroth,[25] who was certainly not a timid surgeon, wrote (circa 1875):—

"Paracentesis of the pericardium is an operation which, in my opinion, approaches very closely to that kind of intervention which some surgeons would term a prostitution of the surgical art and others madness. It is only to remove from this section the reproach of being incomplete that we mention this operation, which has more interest for anatomists than for surgeons. Perhaps a later generation will think otherwise about it. Treatment is becoming more and more surgical, and those most deeply concerned in the practice of internal medicine make plans for the boldest operations."

Legouest[26] says:—

"It might be thought that nothing would be of greater interest than the study of wounds of the heart, but, in fact, there is nothing of less practical interest. A few curious but authentic facts, others more or less doubtful, an uncertain symptomatology, a treatment all but hopeless, an ending almost always fatal, such is a summary of the impression resulting from a study of wounds of the heart."

Riedinger[27] in 1888 wrote:—

"The suggestion to suture a wound of the heart, though made in all seriousness, scarcely deserves mention."

From the time of Morgagni onwards clinical and pathological observations and records became more accurate, and the symptoms and lesions of injuries and diseases of the heart gradually became better known.

The paper published by Fischer[28] in 1868 marks the close of this period. It is an admirable clinical and pathological record, but lacks any serious suggestions for surgical treatment.

While the opinion prevailed that arrest of the function of the heart would follow surgical interference with this organ, and so long as the ancient reverence attaching to the tissues of the heart prevented lesions of the heart being treated on ordinary surgical principles, it was natural that no one suggested that wounds of this organ should be sutured.

It is scarcely 20 years ago that surgical measures found a definite place in the treatment of injuries and diseases of the heart.

WOUNDS AND DISEASES OF THE HEART.

Besides wounds inflicted by cutting instruments and bullets, and traumatic ruptures of the heart, the heart may be the site of aneurysm from disease. There are several such cases recorded in literature.[29] Traumatic aneurysm is the cause of secondary hæmorrhage in wounds of the heart as it is in wounds of the great arteries, especially in cases of pericardial sepsis. Cases of suture of the heart that are apparently doing well for many days or longer, and then die of secondary hæmorrhage into the pericardium, are cases of rupture of traumatic aneurysm of the heart.

Case of Cardiac Aneurysm.[30] A man had been wounded 10 years before his death by a knife-thrust to the left of the sternum. A cardiac murmur had been audible since the injury. He gradually recovered from the wound and felt no inconvenience until a few weeks before his death.

Autopsy: Heart enlarged, universal pericardial adhesions. Through the pericardium a hard, prominent substance could be felt in the wall of the right ventricle. The pericardial adhesions could be separated everywhere but over this swelling. The hypertrophy of the heart affected chiefly the left ventricle, the cavity of which was elongated and expanded. On the inner aspect of the wall of the right ventricle was an opening through which the little finger could be passed into a cavity as large as a walnut, at the bottom of which was felt a hard nodular body. The sac proved to be an aneurysm of the heart, the wall of which was entirely formed by the fused layers of the pericardium and contained no muscular fibres. In the sac was a hard fibrinous clot. Opposite the opening of the aneurysm into the right ventricle was an opening in the septum leading into the left ventricle.

A wound of the trunk from a bayonet or lance is not often seen in hospital. The reason is that such wounds are so serious that the soldier seldom survives. Guthrie[31] gives another reason for these wounds being uncommon. After describing bayonet and lance wounds, he continues:—

"Opposing regiments, when formed in line, and charging with fixed bayonets never meet, and struggle hand to hand, foot to foot, and this for the very best possible reason that one side turns round and runs away as soon as the other comes close enough to do mischief, doubtless considering that discretion is the better part of valour. Wounds from bayonets were rare in the Peninsular War. It may be, that all those who were bayonetted were killed, yet their bodies were seldom found. Small parties of men may have personal conflicts after an affair has been decided; or in the subsequent scuffle if they cannot get out of the way fast enough. The battle of Maida is usually referred to as a remarkable instance of a bayonet fight; nevertheless, the sufferers, whether killed or wounded, French or English, suffered from bullets, not bayonets."

EXPERIMENTS ON THE HEART OF ANIMALS.

The most important observation was made by Morgagni in his De Sedibus et Causis Morborum that a puncture of a coronary artery on the external surface of the heart might cause such an amount of hæmorrhage into the pericardium as to compress and arrest the heart. This was the first indication that surgical exposure of the pericardium and the evacuation of the fluid within it might relieve the heart from compression.

There have been many surgeons during the last 150 years (including Baron Larrey,[32] Napoleon's surgeon) who have endeavoured by experiments on dogs to discover why wounds of the heart were fatal and how death could be prevented.

Between 1882 and 1895 the surgeon experimenters discovered (1) that blood effused into the pericardium must be removed because it embarrassed the action of the heart, and (2) that a wound into the cavity of the ventricle of the dog's heart could be successfully sutured.

The first successful experiment of making a wound in the heart of an animal and then closing the wound by suture was performed by Del Vecchio[33] in 1895 and he suggested the method that should be adopted in operations on man.

Remarks from Del Vecchio's paper. As a result of experiments on dogs he concludes that suture of the heart of man in cases of wound is possible. At the Congress of Rome (1894) he showed a dog in

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[25] Quoted from Rose. (Deutsche Zeitschrift für Chirurgie, vol. xx.)

[26] Dict. Ency. des Sciences Med., 1re Serie T., xviii., p. 684, 1876.

[27] Quoted from Borchart's paper, Sammlung Klin. Vorträge, Neue Folge Chirurg., No. 113, 114, 806.

[28] Langenbeck's Archiv., vol. ix., 1868.

[29] See p. 315, "Ligation in Continuity." Specimen in Guy's Museum. Also THE LANCET, August 2nd, 1919. The patient died of rupture of the aneurysm into the pericardium.

[30] Quoted from G. Fischer Langenbach's Archives, vol. ix. Ref. given, Gaz. Med. d'Orient, Sept. 6th, 1860.

[31] Commentaries on the Surgery of the War in Portugal, Spain, France, and the Netherlands, fifth edit., 1853, pp. 35, 36, and 37.

[32] Clinique Chirurgical, ii., 284, and Clin. Chir., i., 319.

[33] Sutura del Cuore, Riforma Med., 1895, 79-80. Also B.M.J., June 1st, 1895, Epitome, par. 417.

which a penetrating wound of the ventricle had been sutured successfully with catgut. The dog was killed on the fourth day. There is a special difficulty in dogs as the pleura must be opened. He proposes removal of the fourth, fifth, and sixth rib cartilages in man. The pleura is to be pushed on one side, then the pericardium incised, blood and blood clots removed, and the wound in the heart sutured. Death may be caused by the pressure of the blood in the pericardium, but this pressure also checks the bleeding which is liable to recur fiercely as the intra-pericardial pressure disappears.

These experiments were confirmed by Salomoni of Messina,[34] who also experimented on dogs. A wound was made in the left ventricle and then sutured, and the dogs when killed after healing had taken place, presented only a pericardial adhesion at the site of injury. These successful experiments stimulated surgeons to attempt suture of the heart in man. Farina,[35] Cappelen,[36] and Rehn [37] were first in this operative field. Thus commenced a new and wonderful advance in surgical practice.

In dogs the different great vessels can be compressed during operation, keeping the heart empty and the operation bloodless. "The same expedient might be employed in man."[38] The pulling forward of the apex of the heart by a fixation stitch will, to some extent in man, kink the great vessels and so effect the same purpose.

Rehn has proved experimentally that the most effective way to obtain hæmostasis in heart suture is by grasping the root of the heart on a level with the right auricle and compressing the vena cavæ at their entrance into the auricle.

The late Sir Lauder Brunton[39] published a preliminary note on the possibility of treating mitral stenosis by surgical methods. He suggested that a mitral stenosis could be transformed by a surgical operation with benefit to the patient into one of mitral insufficiency or regurgitation. Cushing and Branch[40] reported some experiments on this question. Bernheim[41] in 1909 established experimentally a condition of mitral stenosis in dogs by means of inserting sutures. He later relieved this artificially-produced stenosis in the animal by establishing at a second operation a condition of mitral insufficiency. As superior to drainage, he left a small gap in the pericardium unclosed for the escape of exudation.

"Not only can lesions of individual valves be produced without immediately fatal consequences to the animal, but the survival of the animal is sufficient to permit a careful study of the primary and secondary disturbances of the circulation which closely imitate the same phenomena caused by cardiac disease in man. Obstructive and regurgitant lesions of the aortic pulmonary mitral and tricuspid valves and septal lesions imitating congenital deficiencies can now be systematically produced in the laboratory."

"Though the surgeon may not be able to profit immediately by these brilliant laboratory accomplishments in cardio-valvular surgery, they show that with proper methods and with a comparatively simple technique successful intracardiac surgery in man is possible."[42]

[34] XI. Italian Congress of Surgery, 1896.
[35] Private letter to Sir John Bland-Sutton, B.M.J., May, 1910.
[36] B.M.J., May 23rd, 1896; l'Epitome, par. 81.
[37] Centralblatt f. Chir., 1896, 1048.
[38] Warbasse, Surgical Treatment, vol. ii., 1918, and R. Haecker, Archiv f. Klin. u. Chir., Band lxxxiv.
[39] THE LANCET, 1902, vol. ii.
[40] Journal of Medical Research, 1908.
[41] Johns Hopkins Hospital Bull., 1909.
[42] Matas: Ibid., p. 47. Ricketts published a work on "The Surgery of the Chest" in 1918. Chapter XI. is a review of the experimental surgery of the heart. He describes the following operations: valvotomy, valvectomy, valvoraphy, and valvopexy.

For the present it is sufficient to affirm the obvious fact that without the successful experiments on the suture of a wound of the dog's heart the suture of a wound of the heart of man would never have been an accomplished fact.

Farina's case. Farina sutured a wound in the left ventricle of a man, and the patient lived several days.

Private Letter to Sir John Bland-Sutton from Dr. Guido Farina, December, 1909.

"The first case of surgical interference on the heart which I had the opportunity of performing was carried out in March, 1896, at the Spedala della Consolazione. The patient was a man 30 years of age, who received a blow from a very fine and sharp dagger in the fifth intercostal space in the parasternal line. The wound penetrated to the cavity in an oblique direction from above downwards and from without inwards. It wounded the pericardium and penetrated into the ventricle. The wound in the myocardium was about 7 mm. long. I removed the fifth costal cartilage and a bit of the rib for about 15 cm. Then I strongly retracted the fourth and sixth costal cartilages. I arrived on the wounded heart. I sutured the wound with three silk sutures, and between these particular points I placed two others of less importance. Everything went well till the fifth day, when a violent broncho-pneumonia declared itself on the right side and in three days killed the patient. The thoracic wound healed by primary intention.

At the autopsy the wound in the heart was found perfectly healed. The heart was not allowed to be preserved for further study. It was precisely because of my irritation at this fact that I have not published any communication on this interesting case."

Cappelen's case.

A man, aged 24, received a stab wound in the left side some hours before admission. He went home alone, and about an hour afterwards was found lying in a pool of blood. On admission he was unconscious, but the heart sounds could be heard though he was pulseless. A punctured wound was present in the fourth left interspace in the mid-axillary line. He improved with a camphor injection.

Operation.—Wound enlarged, fourth rib resected. Pleural cavity filled with blood, 1400 c.cm. The lung was not wounded; 5 cm. of the third rib then resected. Wound of pericardium, 1 cm., was then seen; this was enlarged, and the blood and clot in pericardium removed. The wound in the pericardium being enlarged and the blood and clots in the sac removed, a wound 2 cm. long was seen in left ventricle. The wound was sutured and a bleeding artery on the heart tied. Patient lived 2½ days. Septic pericarditis was present.

Rehn's case.

The patient was exhibited 14 days after the operation. The man had been stabbed with a table knife; and there was bleeding from the wound, and signs and symptoms of distension of the pericardium. On the day following the injury, Rehn removed the blood clot from the pericardium as well as from the left pleural cavity. He also inserted sutures into the wound in the wall of the heart, and afterwards closed the opening in the pericardium and chest wall except for drainage. On the fourteenth day the patient was recovering well.

TREATMENT OF WOUNDS OF THE HEART IN ANCIENT TIMES.

To arrest hæmorrhages and to arrest or prevent infection are still, as in the days of Celsus, the two dominant indications in the treatment of surgical injuries. The means for preventing infection are considerably elaborated at the present day, but were not wholly unknown to the ancients.

The prevention or arrest of sepsis is the crucial factor in the treatment of wounds of the heart. The cases recorded in the Daily Review of Foreign Literature (March 18th, 1918) illustrate this point.

In early times wine and honey were used as a dressing for wounds. The good Samaritan poured in oil and wine. In Indian surgery ghee and honey is a common application. The value of honey for this purpose is probably due to its containing formic acid.[43] The Greeks made use of warm water and a "bitter root"[44] crumbled in the hand," which "stayed the pain and dried the wound." The bitter root was probably peony, which still grows wild in Macedonia and is still used as a styptic.

Homer describes how a colonel, R.A.M.C., in the Greek army, Eurypylos by name, received a big flesh wound from an arrow in the thigh. The sweat ran down streaming from his head and shoulders, and from the cruel wound the black blood was welling. He was limping out of the battle when Patroklos came to the rescue:—

> "There stretched at length the wounded hero lay;
> Patroklos cut the forky steel away.
> Then in his hand a bitter root he bruis'd;
> The wound he washed, the styptic juice infus'd.
> The closing flesh that instant ceas'd to glow,
> The wound to torture, and the blood to flow." [45]

The Greeks in the Persian wars were far less equipped for the treatment of wounds than the Persians—e.g., the story of Pythos,[46] who was made into "butcher's meat" in a sea-fight, but was patched up by the Persian surgeons: "healing his wounds with myrrh and other herbs, and covering them all up in shield-slings or rolls of silky or fine linen." This is, I believe, the first authentic mention of a surgical bandage. The modern Greeks use ladanum[47] for wounds; it is the natural gum of a cistus or some such plant, dark green and smelling like Stockholm tar. My brother-in-law, Professor Myres of Oxford, held the rank of Commander R.N. during the war. He wrote to me of this cistus juice: "If I were a bacterium I should encyst at the sight of it! ..... I have tried it."

There is an impression that there was far less tendency for battle wounds to be septic in ancient than in modern times.

"The difficulty of real knowledge of ancient things lies largely in the accident of our remoteness. We stand very far off, and have to strain our eyes. For us the comparison of ancient and modern is largely a comparison of something half seen at a distance with something which we know intimately ..... we see only the bold outlines ..... we are apt to miss the little lights and shades ..... we have not the knowledge or the sympathy to catch, across the gulf of years, the peculiar thrill of what was once a 'winged word' flying from soul to soul."[48]

Ancient and modern Greek weapons were, and are, cleaned with sand and sharpened on any convenient whetstone, such as a sandstone bridge-coping, or a sandstone well-head. We know that friction will sterilise a knife. Poisoned weapons were not thought fair in later Greek warfare. There were certain moral influences during the rise of the Greek Epic which ruled out poison in decent fighting. The fruit of the rise of another type of "kultur" in our own time was the introduction into warfare of poison gas and liquid fire.

"The Iliad is full of battles and of battles fought with extraordinary fire. Yet the spirit of them is not savage. It is chivalrous. No enemy is ever tortured. No prisoners, with one exception, are ever maltreated."[49]

"There is no doubt that the primitive inhabitants of Greece used arrows. The very word for poison means "belonging to an arrow." The arrows of Heracles in Hesiod had on the front of them—death and trickling drops. ..... Now in the Iliad poison has been completely cleaned off the arrow heads. Poison is treacherous, ungentlemanly; a weapon for low barbarians, not for heroes."[50]

"Greek poetry," writes Professor Murray, "was the embodiment of a force making for the progress of the human race. By progress I understand some gradual ennobling and enriching of the content of life—some movement towards the attainment of that "chief end of man," which is, according to the magnificent definition of the document known in Scotland as the "Shorter Catechism," "to glorify God and to enjoy him for ever."[51]

Barbed arrows—and Greek arrows were usually barbed—cannot be cleaned properly by the soldier. Most Oriental arrows were merely leaf-shaped and would be much more cleanly. The poison, when used on arrows, was probably obtained from the yewberry.[52]

There are some lurid septic details in Sophocles—e.g., the wound of Philoktetes, made by a poisoned arrow, ulcerated and caused an intolerable smell and intolerable pain, while the moanings of the hero so alarmed his companions that they shipped him off in a hurry from the Straits to Mudros. The medical service was lamentably defective; the patient was simply dumped on the beach with some "rags" and "iron rations"—just whatever they had! The remedy was as bad as the disease: little water, no food, no fuel, a dish of raw pigeons if you could hit them. The only people that were good to him were some V.A.D. nymphs from the water meadows!

The surgeon of to-day, looking over the works of Hunter and his immediate successors, cannot fail to be struck with the small place that surgical intervention then held in the treatment of disease and even of emergencies. The resources of surgery 100 years ago in dealing with the lethal consequences of disease and injury was so limited that the contrast with the present time is evidence of a wonderful evolution in our science during the last 40 years.

(To be continued.)

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[43] A. Vogel found in crude honey 0·1 per cent. formic acid in 1882.

[44] "As to the bitter root being peony this, of course, is possible. The well-known red peony of the gardens is *Pæonia officinalis*. It is native in South Europe. Commercially as a drug it is stated the bark is usually removed from the root, leaving the root in colour purplish and whitish. It has an acrid taste and distinct odour when fresh of bitter almonds. As a suggestion it occurs to me that the bitter root might be from the barberry or even gentian" (letter from Mr. Martindale).

[45] Iliad XI., 933 et seq. (B.C. 900). (Pope's translation.)

[46] Herodotus VII. 181 (B.C. 455).

[47] Ladanum is synonymous with labdanum. It is an extract from *Cistus creticus*. It is obtained from countries bordering the Mediterranean. The substance is gathered either by whipping the plants with leather thongs to which it adheres or by collecting it from the wool of sheep which have been made to travel among the plants. It occurs in dark brown masses or lumps. The heat of the hand is sufficient to soften it. It is almost completely soluble in spirit (letter from Mr. Martindale).

[48] The Rise of the Greek Epic. Gilbert Murray, 2nd edition, 1912, p. 27.

[49] Gilbert Murray: Ibid., p. 145.

[50] Gilbert Murray: Ibid., pp. 148-149.

[51] Gilbert Murray: Ibid., p. 21. Additional remarks by Professor Gilbert Murray: "Hellenism was always in an uphill war against Paganism in the questions of human sacrifice, cruelty, slavery, the subjection of women and immorality" (p. 15). "Greek civilisation rose from the swampy level of the neighbouring peoples. Every Greek community is like a garrison of civilisation amid wide hordes of barbarians. Hellenism was represented everywhere by a handful of men holding an outpost, men who wrought their wonderful day's work in political and moral wisdom, in speculation, in beauty of outward form and inward imagining; with an ear ever open to the sternest of life's calls, and the hated spear and shield never far out of reach" (pp. 30-31).

[52] Yewberry (*Taxus baccata*). "Taxine, the alkaloid extracted from the leaves and berries, depresses the action of the heart in frogs, rabbits, cats, and dogs. It interferes with respiration and causes death in a short time through suffocation." Thorpe's Dictionary of Applied Chemistry, vol. v., 1913.

A Lecture

ON

THE AIMS OF THE WELSH NATIONAL MEDICAL SCHOOL,

WITH SPECIAL REFERENCE TO PREVENTIVE MEDICINE.

"FINEM RESPICE."

Being the Inaugural Lecture of

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MANSEL TALBOT PROFESSOR-DESIGNATE OF PREVENTIVE MEDICINE, UNIVERSITY OF WALES (LATE DIRECTOR OF WELFARE OF HEALTH, MINISTRY OF MUNITIONS AND H.M. MEDICAL INSPECTOR OF FACTORIES).

GENTLEMEN,—Three thoughts have influenced the choice of my subject to-day: 1. I form part of the Welsh National School of Medicine, whose name as a school is a great and ambitious one, unique among the medical schools of the United Kingdom. He who bears a high title, bears also concomitant cares and responsibilities—*atra cura sedet post equitem*. The title in the present case carries with it responsibility for educating and training in the best possible way those who, in the future, must hold in their hands the health of the Welsh nation. 2. The immediate future is to see the school reorganised and expanded, at a moment when the whole question of the teaching of medicine is receiving the most serious consideration; when doubts are openly expressed as to the efficacy of the scheme of training which has prevailed up to the present; when the health of the whole nation is being taken charge of by the new Ministry of Health; and when new knowledge of the human body in relation to health and disease is crowding in upon us. Serum-therapy, radiology, radiography, balneology, ionisation, dietetics, eugenics, osteopathy, to name only a few, all cry aloud to be included in a curriculum already overloaded with organic chemistry, anatomy, physiology, bacteriology, pathology, pharmacy, midwifery, gynæcology, surgery, curative medicine, the special departments of eye, ear, throat, and skin, lunacy, and fevers, and the great field of public health administration. 3. I personally am undertaking a heavy responsibility in that to-day I am the first occupant of the only chair in the kingdom devoted entirely to the subject of preventive medicine. There is no tradition to guide, no precedent to refer to; all must be wrought *de novo*. These three ever-present thoughts have directed me to fix the title which appears at the head of these remarks.

THE RISE OF MEDICAL SCHOOLS.

University schools.—The history of medical schools shows that they came into existence on no ordered plan. In the Middle Ages there were at such ancient seats of learning as Oxford, Cambridge, or Padua schools of medicine, where some famous physician presided over a band of students who came to sit at his feet. How he taught and what he taught, with no laboratories and no hospital beds, we can have but little idea. We can but suspect that many a practitioner of those days, looking back on his student times, must have thought:—

> "Myself when young did eagerly frequent
> Doctor and Saint, and heard great argument
> About it and about: but evermore
> Came out by the same Door that in I went."

Be that as it may, we can see that the trend of teaching must have been to the philosophic and more scientific side of medicine. Even to-day we see this tendency perpetuated. Oxford and Cambridge treat medicine essentially as a science; they lay down a scientific rather than a utilitarian groundwork; they deal only with preliminary subjects, and treat anatomy and physiology as pure sciences. Then the student passes away to learn the technique of his profession at one of the great hospitals. There, although the method of his training must persist, he is inclined to leave the sciences behind him as "Something accomplished, something done"; and opportunity is lacking for him to return again and again to the familiar laboratories and to his teachers for light and leading in the interpretation of the new facts he is being called upon to absorb.

Hospital schools.—At the same time as certain institutions, such as those of St. Bartholomew and St. Thomas, originally started as hostels for the poor, came to be devoted to dealing with the sick, hospitals as we know them to-day began to emerge. They were attended by physicians and later by surgeons (for I must remind you that surgery was, until the end of the eighteenth century, looked down upon by physicians and left to the barbers); these men had attached to them apprentices, the prototype of the medical student of to-day; and the system which existed can fairly be compared with that of the trade guilds and their apprentices. Many physicians, in no way connected with hospitals, also had their apprentices, just as lawyers to-day have their articled clerks, and hospital training was not a necessary part of the student's career. You may recall how, in 1811, the poet Keats was so apprenticed for five years to Mr. Thomas Hammond, a surgeon and apothecary of Edmonton; and bound himself "not to haunt taverns or playhouses, not to play at dice or cards, nor absent himself from his said master's service day or night unlawfully, but in all things as a faithful apprentice to [he shall] behave himself towards the said master and all his during the said term." After 3½ years Keats left Hammond and joined St. Thomas's and Guy's before becoming a Licentiate of the Society of Apothecaries. This apprenticeship system continued well into last century, and there are still doctors at work to-day who in their time served as apprentices. An excellent picture of how the medical student of the first half of nineteenth century carried on his work is to be found in Samuel Warren's book, "The Diary of a Late Physician," wherein is vividly described how one part of his duties was carried out—the resurrecting of a body for anatomy purposes in pitchy darkness on a cold night amid drenching rain; the details are realistically gruesome. But there is no elegy by Keats of such a churchyard scene. Perusal of this chapter must make every student of to-day thankful for the Anatomy Act, and prevent him from being a *laudator temporis acti*.

At the hospitals after a time, as the necessity for more scientific training became obvious, instruction in the preliminary sciences was arranged. But, with few exceptions, the university outlook has not been attained; and the training, although taking less and less notice of minor complaints and of the housing and occupations of the patients, has always retained an essentially utilitarian outlook; while, on the other hand, the universities have continued to preserve a more purely scientific point of

view. Each side can claim advantages; broadly speaking, the great scientists, physiologists, and anatomists, are found attached to the University schools, and famous physicians and surgeons to the hospital schools.

Meanwhile, not only the teachers but the profession as a whole have been losing touch with the social life of the community. Teaching, in the first place, has been in the hands of the scientist and the specialising consultant, who have no intimate acquaintance with general practice. On the other hand, the general practitioner himself, called in to cure, has had perforce to confine his attention to the illness before him, for altered social conditions have conspired to narrow his outlook. The practitioner of the eighteenth century found his patients employed on the land or in some home industry, and he was familiar with their daily lives. To-day occupation is carried on in the mine, the factory, the mill, and the business house, not merely by men, but, to an increasing extent, by women also; and the doctor has lost touch with working conditions—those conditions which frequently supply the reasons for the illness he is treating. Thus he is unable to study the predisposing influences, to balance up cause and effect, and to act as a guide towards health and the prevention of disease.

The bearing of the above remarks upon the Welsh medical school, started on university lines, but about to reorganise and include also the hospital curriculum, is clear; the advantages of both systems have to be combined in one and their disadvantages made good.

THE RISE OF PREVENTIVE MEDICINE.

The science of medicine is associated in the minds of most people with the cure of disease. Disease is the point around which thoughts centre; and through the ages, from the time of Hippocrates onwards, attention has been mainly directed to remedies and treatment. The point of view has been that "they that be whole need not a physician, but they that are sick." Nevertheless, there is another great and rapidly growing side of medicine, of which traces exist reaching back into antiquity; I mean the prevention of disease. This side presents a point of view which centres thought on the positive entity, Health, rather than on the varied manifestations of lack of health which we sum up in the negative term, disease. Traces are to be found even in the Mosaic law aimed at preventing the spread of leprosy; isolation of the afflicted person was insisted upon: "he is unclean; he shall dwell alone; without the camp shall his habitation be"; and also disinfection by fire: "He [the priest] shall therefore burn that garment, whether warp or woof, in woollen or in linen, or anything of skin, wherein the plague is; for it is a fretting leprosy; it shall be burnt in the fire." There is also a passage in Jeremiah which recognises the two sides of medicine and might well be engraved over the portals of the Welsh School of Medicine: "Behold, I will bring it [the nation] health and cure."

It would be interesting to trace the history of preventive medicine through the centuries. The Greeks, for instance, not only had their god of healing, Æsculapius, but also their beautiful goddess of health, Hygeia, whose name is perpetuated in the word "hygiene"; and they had town water-supplies, since, according to Plutarch, Themistocles was able to erect a statue at Athens out of fines collected from those who diverted the public water-supply into their own grounds. The Romans had sanitary regulations: food inspection was under Ædiles Cereales; water-supply and sewers were under the Comites Cloacarum; and there were enactments against burial in the city. Rough-and-ready isolation against disease was practised in mediæval times. But the real seeds of preventive medicine were sown in the eighteenth century by such Englishmen as Sydenham, with his thoughts on epidemic disease; Mead, who advocated port quarantine against plague; and Jenner, who introduced vaccination against small-pox. In the nineteenth century came Farr and Simon, the architects of modern sanitary science; to be followed by the great Pasteur, whose epoch-making discoveries led to recognition of the cause of, and means for preventing, certain infectious diseases. Valuable as his discoveries proved to surgery in the hands of Lister, their value in preventing disease has even been greater. Take, for instance, the conversion of the pestilential Isthmus of Panama by Gorgas into a white man's country, which made possible the construction of the great canal; the world is thus in debt for its two great canals to the genius of France: the genius of Lesseps and the genius of Pasteur.

My time is limited, and I can only pause to remark that through the ages there has been a growing recognition of the necessity for a science of preventive medicine, and that this science has swung forward with giant strides synchronous with the advance in civilisation brought about by the industrial revolution of the nineteenth century. Previously, certain diseases, such as leprosy, had disappeared, no one knew quite why. Long before we knew the disease-carrying power of mosquitoes, drainage banished malaria from these isles, where it used to rage (as it does to-day in the tropics) in the morasses round Edinburgh, now the fertile Midlothian country, and in the fens of Lincolnshire. Cleanliness conquered typhus before we recognised the part played in its spread by the louse.

Thereafter the attack on disease has been clearly directed: typhoid has surrendered to pure water-supply and serum; vaccination has defeated small-pox; muzzling has stopped hydrophobia; cholera and plague are kept at arm's length by port quarantine; the tropical diseases—malaria and yellow fever—are eradicated by attacking the stegomyia and anopheles mosquitoes in their breeding-grounds; sleeping sickness, of which wild animals are carriers, is known to be transmitted by the tsetse fly, and the line of attack is thus apparent; typhus in the Serbian Army was overcome by elimination of the louse; infantile diarrhœa is coming under control through destruction of the domestic fly; scurvy and beri-beri have surrendered to suitable vitamines in food; rickets seems likely to follow; scarlet fever under rigid isolation is losing its terrors; we protect to-day against diphtheria, against common colds, and even influenza; hospital gangrene and sepsis have collapsed before Listerism and asepsis; puerperal fever only lingers as a reproach to the accoucheur in whose practice it appears.

These instances of the abolition of certain types of disease would, however, only be matters of passing interest if the general health remained at its old level; if the removal of one disease merely left an unresisting population to fall victim

to others; if the tendency of the sick to be sick remained unaltered; if the vigour of the nation were not increased; for, as Martial expressed it, "*non est vivere, sed valere vita*" (the joy of life is not in living, but in health). But evidence exists that vigour is greater; the death-rate from tuberculosis has, since 1860, fallen 50 per cent. among males and 67 per cent. among females, as the general well-being, expressed in better food-supply, has been rising; infant mortality has fallen from 154 per 1000 children born in 1851–60 to 105 in 1911–18, and the death-rate of England and Wales, which was 20·6 per 1000 living in 1868, had fallen to 13·5 in 1917.

The debt the nation owes to preventive medicine is written in the lives of us all in letters of gold, for a nation's wealth is that nation's health. If I had been speaking some century ago instead of in 1919 my audience would have been smaller. Some of us would have succumbed in infancy; others of cholera; others of typhoid, of typhus and gaol fever, which attacked the judges and witnesses in court as well as the prisoners; others of malaria; more still of consumption; others of small-pox, while any woman present would be an outstanding beauty if not pock-marked to indicate that she had passed through her attack of that national scourge. From a financial aspect we should have had to pay higher for life insurance, but lower for pensions because few could be expected to benefit thereby. Preventive medicine has indeed a proud record, but many a field lies ahead for us to cultivate.

The Official Status of Preventive Medicine.

In contradistinction to curative medicine the preventive side has not been particularly associated with either the university or the hospital schools. It has developed independently, and its distinguishing characteristic has been its official status. This it has acquired through the will of the people expressed in Acts of Parliament, the list of which is long—the Vaccination Act, Notification of Deaths, Public Health and Factory Acts, Burial Act, Housing, Midwives, Employment of Children, Protection of Food, Notification of Births, Education Acts, Old Age Pensions, Health Insurance, Notification of Tuberculosis, and still the list is incomplete. Taken collectively, these Acts represent the most remarkable instance—one to which social economists have not drawn attention—of nationalisation, the nationalisation of health. This body of legislation is an expression of an ill-defined feeling that all is not well; and of the nation struggling, and with a fair measure of success, though until recently on no coördinated plan, to take charge of, protect, and improve its most precious possession, health.

Preventive medicine has lacked one essential to complete success which curative medicine has possessed, although, as already pointed out, it is not stressed in modern medical training. Curative medicine, which, by the way, has never been official, has always been personal to the sufferer; and intimate relations have always existed between the patient and his doctor. Now a doctor, by his very name, should be a teacher; but the doctor, when sent for, is sent for not to teach but to cure; and the public, accustomed to come into personal touch with the profession in cases of illness only, has failed to recognise the personal application of the proverb that prevention is greater than cure.

Possibly I may seem to be drawing too clear a distinction between preventive and curative medicine; if so, it is only for convenience in presenting the case, for I agree that "the aim of treatment in every case, whether preventive or curative, is to remove or counteract the agencies which threaten to produce or have produced the abnormal. In most cases preventive and curative treatment do not differ in kind."[1]

The impersonal character of much preventive medicine of the past is clearly seen in the recommendations of the Royal Sanitary Committee, whose report[2] led up to the Public Health Act, 1875:—

1. The supply of wholesome and sufficient water for drinking and washing.
2. The prevention of the pollution of water.
3. The provision of sewerage and utilisation of sewage.
4. The regulation of streets, highways, and new buildings.
5. The healthiness of dwellings.
6. The removal of nuisances and refuse, and consumption of smoke.
7. The inspection of food.
8. The suppression of causes of diseases, and regulations in case of epidemics.
9. The provision for the burial of the dead without injury to the living.
10. The regulation of markets, &c., public lighting of towns.
11. The registration of death and sickness.

No one can gainsay the value of action on these lines, and I have referred to some of the benefits that have accrued; but each member of the community is only interested in these matters in a half-hearted way. The man in the street does not understand mortality-rates or life-tables; infant mortality does not excite him; he takes his water-supply and public sanitation for granted; he avoids a sewage farm, and pours smoke into the atmosphere if he can get coal for the purpose. He only becomes vocal amid a plague, like influenza, which he is sure is someone's fault, not his own. There have been no health practitioners visiting and talking things over as the family doctor talks over the family treatment of measles, bronchitis, indigestion, headache, sciatica, and the like. More personal interest is needed; and recent advances in preventive medicine are already supplying the need. Maternity and infant clinics are dealing with the individual mothers and babes; and their success is remarkable. School medical inspection and school clinics are similarly personal, and are accepted without demur. Home-visiting arising out of the above, and in connexion with tuberculosis work, is carrying the apostles of health into the home. Welfare supervision and safety-first work in factories are appealing directly to each worker. Thus preventive medicine is steadily becoming more personal and more popular.

Personality in Industry and Health.

I would venture on a comparison by saying that the nineteenth century discovered the general principles of sanitary science, just as in industry it discovered the principles underlying the use of power-driven machinery. Machinery has revolutionised civilisation. Sanitation is revolutionising national health. The twentieth century in the industrial world is now discovering the individuality of workers; the value to output of selecting the right man for each task; the value of shortened hours of labour and organised rest-pauses, of health super-

[1] Interim Report of Education Committee on Preventive Medicine, General Medical Council.
[2] Report of the Royal Sanitary Commission, 1871, vol. i., p. 20.

vision and industrial canteens. The discovery in the world of preventive medicine is similarly the importance of the individuals who collectively form the nation. In industry the maximum output depends upon the worker as a human being; no matter what inventive genius is applied to improving mechanical appliances, it is the man at the machine who determines the output, and who can increase or decrease that output in proportion as he is physically and mentally healthy and fit. In the field of preventive medicine the provision of pure water, perfect drainage, and clean air cannot compel an unwilling public to drink at the clear spring of health; everything must finally depend on the individual if the health of each is to be ensured, if the nation as a whole is to become A 1. Sir George Newman, after pointing out[3] that as the nineteenth century was drawing to a close preventive medicine became more personal, social, and apposite than formerly, based more on the child, was concerned more with the individual than with the environment, goes on to say: "In the last decade of the nineteenth century came the London Public Health Act, legislation on housing and on industrial betterment, on the cleansing of persons as distinct from properties, and on the education of blind, deaf, and defective children, the provision of school meals, the protection of food, the notification of births, the medical inspection and treatment of children, the Children Act itself, old age pensions, the health insurance of the adolescent and adult, and a group of Acts concerned directly with some of the prevalent diseases, tuberculosis, mental deficiency, ophthalmia neonatorum, and the venereal diseases. No individual planned this significant sequence, no single factor explains its emergence. It represents a new social spirit, a new application of science to the life and labour of man."

The Coming of the "Health" Nurse.

Now turn to another comparison between curative and preventive medicine. Curative medicine was confined to medical practitioners until the middle of last century, when, arising out of the inadequacy of hospital work disclosed in the Crimean War, Florence Nightingale called into existence the hospital nurse. How the profession worked previously at the mercy of Sarah Gamp and her invisible colleague, Mrs. 'Arris, is difficult to-day to imagine. But a true mate has been found, and the trained nurse is an integral part of the medical profession. She in her turn has called into existence the invaluable hospital almoner. Meanwhile the trained midwife is rapidly replacing her prototype and becoming indispensable throughout the land; she bids fair soon to relieve the practitioner to a great extent of her side of his work; her sphere of activity, which is prevention rather than cure, provides an excellent instance of the inseparability of the two sides of medicine.

Preventive medicine is treading close on the heels of his elder brother, and in seeking for a mate has called into existence a new type of nurse, the health visitor; and she is becoming as necessary in her field of work as is the trained hospital nurse in hers. Her predecessor, if she had one, was the village nurse and district visitor. To-day she is wanted in the maternity and infant clinic; she is necessary to the school clinic and tuberculosis dispensary; home visitation is in her hands; and she is needed in the factory. Her work is ever expanding in the city and on the countryside. Her importance to the future of preventive medicine, to its immediate and personal application, is immense.

THE TASK TO BE ACCOMPLISHED.

What is then the task which lies before the Welsh National Medical School? What are its responsibilities? It has to train a whole and complete medical service for the Principality so that there may be established throughout Wales a capable and well-equipped band of apostles preaching the gospel of health on hill and dale, in hamlet, village, and town. The band must be complete, medical men and women, general practitioners and consulting specialists, medical officers of health, school officers, factory officers, maternity and infant welfare officers, tuberculosis officers, and trained nurses, hospital almoners, midwives, health visitors, and welfare supervisors. Each and all recognising the place they have to fill in the life of the nation, the dependence of that life upon their work, and the high duty they undertake when entering our profession; but strengthened for their work by being bound together by the bond of a common *alma mater*; imbued with the high aspirations she will have inspired, returning to her from time to time, bringing with them the wealth of accumulated experience, and acquiring in return up-to-date information as to improvements and advances in knowledge.

The Means to Attain the End.

There are available means, general and local, for the purpose in hand.

1. The general experience of the past, and of other places enables that which has proved best and most successful to be selected, and that which has proved less successful, or even disadvantageous, to be avoided. Veneration for antiquity must not be allowed to hamper, nor adhesion to the new because it is new. "Affectations of antiquity and novelty are the humours of partisans rather than judgments."[4] As Clough has expressed it—

> "Old things need not be therefore true,
> O brother men, nor yet the new;
> Ah! still awhile the old thought retain,
> And yet—consider it again."

2. The local facilities include: (*a*) A university college able and ready to provide instruction in all knowledge ancillary to medicine, whether in social economics or psychology, or in the physical sciences of chemistry, physics, botany, or biology; (*b*) a medical school already flourishing, in which the training is on scientific or university lines, a school whose numbers have outgrown its buildings, and for which new accommodation is being provided; (*c*) a hospital, the King Edward VII. Hospital, second to none in modern equipment, and ready at hand for providing clinical instruction in every branch of curative medicine, surgery, and midwifery; (*d*) a unique organisation in the King Edward VII. Memorial for Wales to provide instruction in every branch of tuberculosis work; (*e*) excellent mental and fever hospitals adjacent (and the authorities of the former are even now taking steps to develop, through a mental clinic, the preventive side of nervous diseases which has been neglected far too long); (*f*) Cardiff and Glamorgan possess maternity and infant welfare and school clinics, ready for providing instruction as regards the health of mothers, babes,

[3] An Outline of the Practice of Preventive Medicine, Sir George Newman, 1919, p. 15 (Cmd. 363).

[4] Novum Organum, Bk. 1, lvi.

and growing children, who represent the springtime of life when the seeds of future disease are planted; (*g*) the district is sufficiently industrial to enable industrial medicine to be studied, the mental and physical value of occupation and exercise, the aggravation of ill-health associated with drudgery and fatigue; (*h*) it is sufficiently populous to afford facilities for study of social economics, a volume of knowledge too long unopened by our profession; (*i*) Cardiff is a great port where quarantine can be seen in action, and acquaintance made with tropical diseases; (*j*) there are also important possibilities in the adjacent flourishing towns of Swansea and Newport; (*k*) of immense importance, also, is the Ministry of Health for Wales, in the hands of men with wide vision, able and ready to give invaluable advice and enthusiastic support; (*l*) there is the Prince of Wales's Hospital for after-care of surgical cases; started for maimed soldiers and sailors, it is about to be opened for the treatment of civilians injured in the stress of life; (*m*) last, but by no means least, owing to the generosity of Sir W. J. Thomas, there is the Preventive Medicine Institute now being built, the work of which must permeate the whole or the *raison d'être* of its existence will not be fulfilled. Here is a new thing established in connexion with a medical school, established at a most interesting moment in its existence.

This institute stands to represent not only teaching but also research and the spirit of research. For, as Sir Walter Morley Fletcher has recently written,[5] "The importance of linking research work with university teaching for the gain of each is so universally admitted as to need no discussion." The institute must be acquainted with the health conditions of Wales and be prepared to direct research to meet the needs of the Welsh nation; it must have knowledge of social conditions with which health is so intimately associated; it must be alive to industrial conditions and be prepared to investigate why the industrial worker so often fails to maintain a high standard of health and so is unable to give of his best to the community which he and we all serve; it must note variations in sickness and mortality in different districts and be prepared to assist in searching out the causes and finding the way to remove them, "for where the cause is not known the effect cannot be produced."[6] Its scope must, in short, so far as medicine is concerned, be as broad as that proudly claimed by Bacon, who took all knowledge for his own.

The Next Step.

All these varied organisations and institutions have to be called in to build the structure of our National School of Medicine. The work of coördinating the whole will be no mean task. The conditions are, however, favourable; not merely because the development of the school is looked on with favour, and recognised as a need in the Principality, but because the development of such a coördinating central nervous system for pre-existing units represents the normal process in nature. Nature does not start with a central nervous system and attempt through it to force into existence peripheral units; such a husteron-proteron proceeding is only favoured by "constructive politicians," "Nature to be commanded must be obeyed."

A scheme of instruction must be evolved which will consider afresh the needs of the community the school has to serve. Nor are the needs of Wales only for consideration. Wales is a part of a great world-wide empire, and her sons and daughters go forth to the uttermost parts of the earth; they must be equipped for their work. The duty of the school is imperial as well as national.

The position of the student and the time at his disposal present other important aspects. For adequate teaching of all that each specialist would desire many long years would be required; the students would still remain with their education incomplete at 40, and would finally only issue forth as grey-haired and reverent seniors, to do but a few short years of work before becoming old-age pensioners. Here let me quote again from Sir George Newman.[7] "The object of medical education is not the completely furnished encyclopædic; but the equipped man, alert, ready, trained, with an expanding and enlarging mind, the dexterous and willing instrument of knowledge, technical craft and progress, whatsoever its destination." He goes on to discuss a reduced and simplified curriculum, and states under six headings how to make the study deeper and the training more effective; the fifth heading is of special interest: "Associated with treatment, is the large issue of preventive medicine, in which something approaching revolutionary reform is needed. The ordinary medical student does not require a course of study comparable to that prescribed for the Diploma in Public Health. He is not a 'diminutive' medical officer of health. The knowledge of preventive medicine he requires is something deeper and more intimate than an administrative function or dealing with an environment, more innate than a collection of memorised data; it is such an understanding of the nature of disease that its occurrence can be prevented or it can be checked in the patient before disablement; in short, a curative medicine which is preventive. Its application is not restricted by law or confined by expediency; it is universal. It concerns almost all disease, and not infectious disease only. To express it crudely, death under 50 or 60 years of age has got to be prevented or avoided, and the medical practitioner is the primary agent in the task."

Sir George Newman in here setting a standard is considering only the medical student; but we have to aim higher still, since the Welsh medical school is part of a university. We must send forth men with the mark upon them of a university, a place which Cardinal Newman once defined as a "school of universal training." The general world of culture must be to them an open house, into which they have found their way through university life with minds broadened by exchange of thought and intercourse with teachers and fellow-students in other schools than their own.

Here is the standard we have to aim at and attain; then those who go forth to their work, taught to be—

> "..... inquisitive how pricks and cracks
> Befall the flesh through too much stress and strain,"

will be able to look back on their student days and say (giving a turn to Browning's words):—

> I own the Past profuse
> Of power each side, perfection every turn:
> Eyes, ears took in their dole,
> Brain treasured up the whole;
> Should not the heart beat once "How good
> to live and learn?"
> Not once beat "Praise be Thine!
> I see the whole design."

[5] Fifth Annual Report of the Medical Research Committee, 1919, p. 12. (Cmd. 412.)

[6] Novum Organum, Bk. 1, iii.

[7] Some Notes on Medical Education in England, Sir George Newman, 1918, pp. 116-7 (Cd. 9124).

HOW THE PURPOSE IS TO BE EFFECTED.

The exact way in which the purpose will be effected lies to-day on the knees of the gods. No one can draw back the veil from the future. But the gods help those who help themselves. If after determining upon the end to be attained we adopt the motto *Finem respice*, and if the means to attain that end are present, as they are, nothing can stay the will to succeed. That will is present; it has moved mountains to construct the position as it exists to-day, compared with which the difficulties ahead will be but as molehills. Those who are to be privileged to carry on the work owe deep gratitude to the men who have toiled before, bearing the heat and burden of the day; some have succumbed in the struggle, like Colonel Bruce Vaughan.

Personally, while recognising the magnitude of the task ahead, I bow to these pioneers who have enabled me to say, "The lines are fallen unto me in pleasant places; yea, I have a goodly heritage."

ON THE SERUM-DIAGNOSIS OF SYPHILIS,

WITH SPECIAL REFERENCE TO THE STANDARDISATION OF RED BLOOD CELLS AND COMPLEMENT.

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IT is now well recognised in the laboratory diagnosis and control of syphilis and other pathological conditions in which the phenomenon of complement-deviation is applicable that accurate standardisation of the materials used is essential. Varying or contradictory results are generally ascribed not to any prime fault in the method, but rather to errors in technique due either to inaccuracy or omission of standardisation.

Several good methods are now made available through various publications in which the problem of standardisation has received very thorough attention. The writer, however, ventures to suggest, as one result of his work with Professor J. M. Beattie, that more attention should be paid to the standardisation of the red blood cell suspension. In the test as ordinarily carried out the terms negative, slightly positive, positive and strongly positive, or terms of similar import, are used not to indicate the presence or otherwise of active disease in the patient under examination, but rather the capacity of the patient's serum to absorb minimum hæmolytic doses (M.H.D.) of complement in the presence of the artificial antigen. It therefore follows, in order that results of one laboratory should be comparable with those of another, that the term minimum hæmolytic dose of complement should be rigidly defined, and its actual value in hæmolytic work uniformly established.

Inaccuracies Arising from Lack of Standardisation.

If the M.H.D. used by a worker at one time is less powerful than that used by him on another occasion owing to its being titrated against a less dense blood cell suspension his results on this ground alone, will vary. Other things being equal, a powerful M.H.D. will swing his results to the negative side, and a less powerful M.H.D. will swing his results to the positive side. If this be true of an individual worker the variations will probably be accentuated if the same serum be examined in different laboratories. In an extreme case, for the sake of illustration, if a given syphilitic serum absorbed in the presence of antigen say 5 M.H.D., when M.H.D. = x, the same serum would absorb only 2½ M.H.D if M.H.D. = 2x. Now if 5 M.H.D. were used in the second experiment the result would be complete lysis (i.e., negative) owing to 2½ M.H.D. being free, whereas in the first case the result would show no lysis (i.e., positive) owing to there being no free complement. in each case the value of the M.H.D., although different, being determined by titration against the particular red cell suspension used. Again, if the value of the M.H.D. be small there is a danger of the native anticomplementary power of the serum becoming so obvious that the whole result is vitiated; that is to say, if a given serum owing to its anticomplementary power absorbs 1½ M.H.D. when M.H.D. = 2x, it will absorb 3 M.H.D. if M.H.D. = x. Thus, if 3 of the weaker M.H.D. be used in the test there will be no lysis, not because the serum is positive, but because the serum itself has absorbed all the complement; whereas if the stronger M.H.D. be used 1½ M.H.D. would remain for interaction with antigen and syphilitic amboceptor or lysis, as the case may be. These considerations may in themselves explain the occasional occurrences of several sera, usually in one series of tests, showing high anticomplementary values in the absence of antigen.

Now, the M.H.D. of complement is generally accepted as that minimum amount of complement which will hæmolyse a given quantity of sensitised red cells, primarily that is, it is defined in terms of red cells. In the writer's opinion it should be more rigidly defined—namely, that minimum dose of complement in unit volume which causes complete hæmolysis of a unit volume of *a standard suspension of sensitised red cells* under definite condition of time and temperature. If there be any variation in the strength of the red blood cell suspension the quantity of complement per M.H.D. must also necessarily vary and thus more or less influence the results of the final test. In other words, the strength of the red blood cells suspension must, within the limit of experimental error, be invariable.

Technique Now in Use.

In the various methods published by the Medical Research Committee[1] reference is made to the red blood suspension as follows. Harrison says: "The strength of the suspension which is used in the test is 3 per cent. to 5 per cent., *according to the practice of the individual worker.* ..... I, personally, prefer a 3 per cent. suspension." In this case the blood is "spun until the cells are deposited." Browning uses "3 per cent. of washed sediment." Fildes and Mackintosh advise "..... three washings in all, and use 1 c.cm. deposited washed corpuscles + 19 c.cm. saline" in their test (i.e., 5 per cent.). In method No. IV. in the Medical Research Committee pamphlet the blood is, after dilution, &c., spun until the "cells are all deposited" four times, and used in a 6 per cent. suspension of the deposit, which becomes 3 per cent. in the actual test by dilution with amboceptor. In all these methods. therefore, the blood is centrifuged and made up to a certain percentage in normal saline—namely,

[1] Medical Research Committee Special Report, Series No. 14.

3 per cent. or 5 per cent., and presumably giving on titration correspondingly different values to the M.H.D. A point which this communication emphasises is that, apart from the varying percentages used and the difficulty of making such percentages accurately, considerable variation in the number of corpuscles per unit volume of deposit also occurs, according to the speed of the centrifuge and the length of time given to the process. In an actual experiment the blood, after washing, &c., was spun until the cells were just deposited and the supernatant fluid clear; the volume of the deposit was then 9·5 c.cm. Without disturbing the deposit, the tubes were again spun for 30 minutes longer; the volume was then 7 c.cm.

In the absence, therefore, of precise instructions as to the technique to be followed, differences in the strength of the blood suspensions would appear to be inevitable. If such differences exist then the value of M.H.D. must also necessarily vary.

Illustrative Experiments.

These differences are shown in the following illustrative experiment, where four different suspensions of sensitised red cells were used.

I. Blood washed and finally "whirled" until the cells were deposited, diluted to a 5 per cent. suspension.

II. Similar suspension to No. I., except the "whirling" was extended for an additional 30 minutes, and the deposit made up to 5 per cent. suspension.

III. Same as No. II., but 10 per cent. suspension used.

IV. Suspension made up as detailed below.

In each case the cells were sensitised in the usual manner and complement added. The usual precautions were taken to ensure thorough mixing and adjustment of total volume.

TABLE I.

Suspension.	Complement in volumes.											
	1	2	3	4	5	6	7	8	9	10	11	12
I.	Nil	T	SH	H	H	H	H	H	ACH	ACH	ACH	CH
II.	,,	Nil	,,	,,	,,	,,	,,	,,	H	H	,,	ACH
III.	,,	,,	Nil	T	SH	SH	,,	,,	,,	,,	H	H
IV.	,,	T	SH	H	H	H	,,	ACH	ACH	CH	CH	CH

Nil = No hæmolysis.
T = Trace of hæmolysis—that is, very slight tinting.
SH = Slight hæmolysis—that is, colour slight but deeper than "T."
H = Hæmolysis more or less marked, but not complete.
ACH = Almost complete hæmolysis—colour deeper red with small deposit of red cells.
CH = Complete hæmolysis—no deposit or very slight practically colourless deposit.

The tubes were incubated in water-bath for one hour at 37° C. and results read the following morning, when the non-hæmolysed cells had deposited.

It will be observed that with suspensions II. and III. the experiment did not indicate a minimum hæmolytic dose—that is, it was greater than 12 volumes of complement, whereas the M.H.D. of suspension I. was 12 volumes of complement, and that of suspension IV. was 10 volumes of complement. Excluding suspension No. III., which perhaps was stronger than anybody would ordinarily use in a test, we have three suspensions each with a different M.H.D. and each of which could be used ordinarily in a test. The first one was an ordinary 5 per cent. suspension, the second had merely been centrifuged for a longer period. The third was made up according to details given below.

In reference to Nos. I. and IV. in which the M.H.D. was shown the following observations may be made: Taking the first case M.H.D. = 12 and in the second M.H.D. = 10. and using these quantities in a test, with 3 M.H.D. and 5 M.H.D., as in Harrison's method, we have the following:—

A. Suspension I. 3 M.H.D. = 36 volumes
B. Suspension IV. 3 M.H.D. = 30 ,,
Showing a difference of 6 volumes.

That is, if these two suspensions were used in two tests with the same sample of serum at the same time, there would be a difference in the amount of complement equal to 3/5 M.H.D. (M.H.D. = 10). This point is further demonstrated in the case of the tubes containing 5 M.H.D.

A. Suspension I. 5 M.H.D. = 60 volumes complement
B. Suspension IV. 5 M.H.D. = 50 ,, ,,
Showing a difference of 10 volumes—that is, a difference of 1 M.H.D. (M.H.D. = 10).

It will, I think, be recognised that such variation in the actual amount of complement used, as in taking 5 M.H.D.'s, may make a difference of one whole dose in relation to two different suspensions of cells will possibly introduce serious errors in the interpretation of the results. Especially is this the case when the difference between the blood suspensions, as in Nos. I. and IV., is very slight, as evidenced by the appearance of the first nine tubes in each set (see Table I.).

A further illustrative experiment is now given. The volume of some freshly washed and deposited red cells was measured and suspensions made up respectively to 6 and 10 per cent. in normal saline. Two other tubes of blood, previously measured and found jointly to contain 9·5 c.cm. of deposit, were centrifuged for a further 30 minutes, this, as previously mentioned, effecting a concentration of the cells to 7 c.cm. These were made up to 10 per cent. A further standard suspension was also made. In each case the cells were sensitised before adding the complement by adding the necessary quantity of diluted amboceptor in saline, thus bringing down the percentage to 3 per cent. and 5 per cent. respectively and halving the concentration of the standard suspension.

TABLE II.

A. 3 per cent. suspension,	M.H.D.,	3 vol.	complement.
B. 5 ,,	,,	4 ,,	,,
C. "Standard" ,,	,,	5 ,,	,,
D. 5 per cent. concentrated	,,	(5–6 vol. (say 5·5)	,,

Similar differences are here to be noted, as in the previous table (I.)—namely, four suspensions of sensitised red cells, (A) and (B) in the strength commonly used, (D) a possible variant of (B) and another (C), all required different minimum quantities of the same diluted complement to bring about complete hæmolysis. If multiples of these doses had been used in testing four portions of a given serum (say X 3 and X 5) complement would have been used in quantities as follows:—

Suspension A. 9 volumes and 15 volumes.
,, B. 12 ,, and 20 ,,
,, C. 15 ,, and 25 ,,
,, D. 16·5 ,, and 27·5 ,,

Taking suspension A as a basis for comparison,

B would have 3 and 5 vols. of complement.
C ,, 6 and 10 ,, ,,
D ,, 7·5 and 12·5 ,, ,,
more than that apportioned to A.

Now in terms of the M.H.D. as found with suspension A.

Serum with B receives 1 and 1·6 } M.H.D. in
,, C ,, 2 and 3·3 } excess of A.
,, D ,, 2·5 and 4·1 }

Thus if the serum used was only just sufficiently positive to inhibit hæmolysis with suspension A and one multiple of the M.H.D. of A, partial or complete hæmolysis would occur in all the tubes used with suspensions B, C, and D. A positive result would be indicated if suspension A were used, and slightly positive or negative results would be indicated with suspensions B, C, and D. That these absolutely contrary results do not occur frequently in well-established practice is, I think, due to the fact that strongly positive sera can stand against a considerable excess of complement and frankly negative cases absorb so little complement in the main that they do not adversely affect the result even when, owing to a weak blood suspension being used, relatively small doses of complement are included in the complex. These and similar results would appear to indicate that further standardisation of the red blood cell suspension is essential.

Method of Standardisation.

The method suggested for the standardisation is as follows:—The blood is collected, defibrinated, washed, and deposited in the usual manner. The deposited red cells are then mixed with three or four times their volume of normal saline. A 25 or 50 g. specific gravity flask is weighed accurately (*a*) dry and (*b*) filled with normal saline. This saline is then thrown out and replaced with the heavy suspension of red cells and reweighed. In these weighings the usual precautions are taken, such as the accurate filling of the flask, and the weights are taken at 60° F. This latter is accomplished by immersing the specific gravity bottle, saline, and suspension in a water bath at 60° F. The relative weight of the red blood cell suspension against normal saline at a constant temperature is thus calculated, and this can be utilised as a basis for the further dilution of the suspension.

This method is not a true specific gravity method, for as such it would be necessary to use distilled water as a basis for comparative weight and also for dilution, this latter being, of course, obviously inadmissible. I have found that a relative volume-weight of 1·0040 is a suitable dilution for use, and that the M.H.D. of complement based on such a suspension of red blood cells gives a good range of results in weak positive, positive, and strongly positive cases.

The following is an illustrative calculation in the preparation of the standardised suspension; a 50 g. specific gravity flask was used.

A. Weight of flask	= 22·265	g.
B. Weight of flask and saline	= 72·404	,,
C. Weight of saline (by difference)	= 50·139	,,
D. Weight of flask and blood suspension	= 73·229	,,
E. Weight of blood suspension (by difference)	= 50·964	,,
F. Relative weight of blood suspension $= \frac{E}{C}$	= 1·0164	,,
G. Relative weight of required suspension	= 1·0040	,,
H. Dilution necessary to reduce F to G	$= \frac{0{\cdot}0164}{0{\cdot}0040} =$	4·1

Hence, to obtain the necessary dilution one volume of the strong red cell suspension is added to 3·1 volumes of normal saline—i.e., 31 c.cm. of normal saline is added to each 10 c.cm. of the strong suspension.

Remarks.

An attempt was made to standardise the red cell suspension by the estimation of liberated hæmoglobin by means of a clinical hæmoglobinometer, but this method was ultimately abandoned principally owing to the error inevitably introduced in the final colour-matching. With the adoption of the "relative weight method" a standard suspension is obtainable, in which the errors due to making up the percentages and the possibly large errors introduced by variations in centrifugalisation are eliminated.

It may perhaps be justly claimed that this method of standardisation of the red blood cell suspension will give a practically unvarying concentration of red cells for every series of tests, and will establish a standard value for the term "minimum hæmolytic dose" of complement. It is not claimed that this method of standardisation is any considerable advance in technique because many thousands of excellent results have been obtained without it. The previous lack of such a standardisation may, however, partly explain the known differences which exist between the results obtained on the same serum by different workers.

The method will minimise a source of error, especially in repeated tests and in comparative work generally, and may assist in those "border-zone" cases of mild or doubtful infection and in cases which have been well treated. It is in these difficult cases that very accurate standardisation is essential, but probably less so in frankly positive and negative sera.

Other methods may suggest themselves to other workers, but in the meantime, in the writer's opinion, a fixed standard red cell suspension used in unit volume and, as a corollary, the establishment of a uniform value to the term "minimum hæmolytic dose" of complement is, if not essential, at least desirable. The adoption of this or a similar method involves extra labour. It does not simplify the technique, it rather adds to the demands on the worker. If, however, there is a gain in accuracy the extra time involved will be well spent.

In conclusion, my best thanks are especially due to Professor Beattie and also to various colleagues with whom I have discussed the subject matter of this contribution.

A GERMAN BULLET EMBOLUS.

BY H. J. B. FRY, M.D. OXON.,
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THIS case is recorded as a remarkable instance of the migration of a rifle bullet in the venous blood stream. Previous cases have been noted of the movement of foreign bodies in the vascular system by Grangérard,[1] Lyle,[2] Gregory,[3] O'Neill,[4] and Menuet.[5] Bland-Sutton[6] quotes a number of cases, of which the one here described forms one. In this instance there was a small oval wound of entry a half-inch below the left anterior superior iliac spine. It will be seen below that the bullet entered the vascular system by gouging the posterior aspect of the left external iliac artery and penetrating into the lumen of the left internal iliac vein, causing an arterio-venous aneurysm of these vessels. From this position the bullet was carried up the common iliac vein and the inferior vena cava. It passed through the chambers of the right side of the heart, through the pulmonary valve into the left branch of the pulmonary artery (vide Plate I., A), where it impacted as an embolus in one of the branches supplying the lower lobe of the left lung, thereby causing two infarcts in this lobe (vide Plate I., B, C). Keith,[7] in

discussing intra-cardiac bullets, had drawn attention to the necessity of determining the site of entry of such bullets into the circulation and the reason for their entry without much hæmorrhage, and stated that there was no record of a bullet being carried into the pulmonary artery. Such a tortuous and deflected course as the above is in itself remarkable, but, in addition, there was no injury to be found in either of the veins along which it travelled or of the flaps of the tricuspid and pulmonary valves through which it passed. It is astonishing, on consideration, that the bullet should not have been entangled in the meshes of the chordæ tendineæ and musculi papillares of the right ventricle. Moreover, there was never any pain or discomfort referred to the heart or the lungs. The question naturally arises whether this bullet could have found its billet by any other path. The clinical evidence and post-mortem findings prove without question that the bullet could only have reached its final situation by the above route, as there was no other wound of the body and no other place of entry into the vascular system except the above-mentioned aneurysm.

The history and course of the case present some interesting features in addition to the post-mortem findings. The notes of these are therefore added.

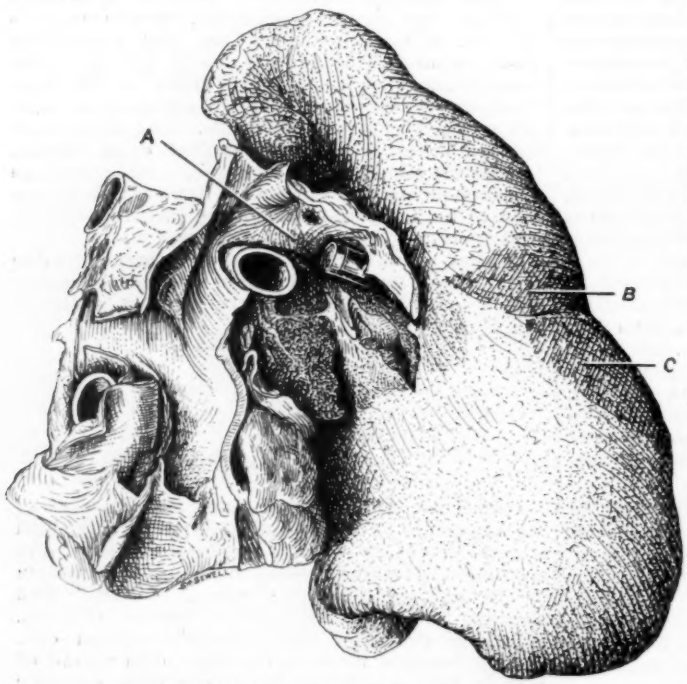

PLATE I.—Pulmonary artery and left lung.

Clinical Abstract.

The patient stated that he was standing by his battery position on April 2nd, 1918, when he suddenly felt a sharp stinging pain in the left foot, and thought that he had been hit there by some missile. His boot was taken off, but no wound could be found. He was unable to walk and was carried to the field ambulance, where his leg was examined and found to be swollen and congested. A small wound below the left anterior superior iliac spine was found, but nowhere any wound of the leg.

On admission to this hospital a small, oval, suppurating wound, apparently superficial, was present immediately below the left anterior superior iliac spine. There was no evidence of penetration and no track could be found. The left foot was puffy and discoloured, and there was no capillary reaction. No pulse could be felt at any point in the leg. A widespread ecchymosis beneath the skin of the left loin and left iliac fossa and a well-marked humming murmur heard at its loudest about 2½ inches below and to the left of the umbilicus, together with a thrill, afforded a diagnosis of an aneurysm of the left external iliac artery. The whole of the left leg was considerably swollen and œdematous. The patient continually complained of much pain in this leg. The temperature was normal on admission, but the pulse was rapid, 100–120, full, but of low force and tension. The pulse-rate was rapid throughout the course of the illness. X ray report was: "No evidence of F.B. from level of umbilicus to knees."

For a week the patient's general condition remained good. There was some collapse of the bases of both lungs. A hæmic systolic murmur was present at the apex of the heart, and it was especially loud in the pulmonary area. The pulse was rapid (136 per min.), full, and soft. Blood pressure 95–100 mm. Hg. Respiration was rapid (36 per min.) and shallow. There was a slight icteric tinge of the skin of the face and conjunctivæ, and considerable œdema of the back. Urine showed a faint trace of albumin, a few urinary epithelial cells, and one or two degenerated granular casts. Ten days after its receipt the wound was almost healed and the ecchymosis of the loin had disappeared, but gangrene of the left leg was complete and the leg was therefore amputated below the knee by Captain Le Mesurier, R.A.M.C. (T.C.).

The patient's condition improved for a short time, but in a few days the amputation stump became gangrenous. A booming cavernous note was detected in the aneurysmal murmur as though the aneurysm had enlarged, and the respiration, which had always been shallow and rapid, became gasping and very rapid, with a greatly increased pulse-rate. Finally the patient became delirious, the pulse was uncountable, and the respiration-rate rose to 60–70 per min. The temperature steadily rose and the patient gradually sank and died in coma, one month after the receipt of the wound.

Post-mortem Notes.

The peritoneal cavity was free from fluid, except for a small quantity of blood-stained exudate. In the extra-peritoneal tissue planes in the region of the left iliac fossa and left psoas muscle was a widespread ecchymosis extending into the pelvis and across to the right iliac fossa. There was a large fluctuating swelling commencing at the lower part of the left common iliac artery and vein. Its periphery was ill-defined. The abdominal aorta appeared contracted and rather shrunken, and the left common iliac artery was small. Both vessels contained a little recent clot. The inferior vena cava was large and dilated and full of dark fluid blood. The renal veins were large, and both common iliac veins were distended, especially the left. The left femoral artery was small, collapsed, and empty, but the femoral vein and internal saphenous vein were large and thrombosed. The aneurysm was ligatured above at the common iliac artery and vein, and below at the femoral artery and vein. On dissection it was found that the left external iliac artery communicated along its posterior aspect, immediately below the origin of the left internal iliac artery (Plate II., A), by a bevelled opening, with the anterior wall of a large saccular aneurysm about 4 inches long by 3½ inches wide formed by the internal iliac vein. The external iliac vein lay in the anterior wall of the aneurysm, with a crescentic opening into the apex of

the sac (Plate II., B). It was completely thrombosed below this opening. The external iliac artery was patent both above and below its opening into the sac (vide Plate II.).

The liver was enlarged, hard in parts, and showed a typical "nutmeg" appearance. The spleen was slightly enlarged, dark coloured, tough, and elastic. The kidneys showed congestion at the bases of the pyramids, but were free from marked changes. The pleural cavities contained a small quantity of blood-stained exudate, and the pericardial cavity contained a slight excess of clear fluid. The right lung showed some collapse at the base of the lower lobe and posterior border. There was a slight compensatory emphysema of the upper lobes. The left lung showed an infarct 4 inches from base of the lower lobe immediately below the inter-lobar fissure extending to the anterior border of the lung. The infarct was dark red, very hard and well defined, size 4½ inches by 1½ inches broad. The adjoining lung tissue was healthy. There was a smaller infarct 1¼ inches above the larger infarct near the anterior border of the lower lobe, which showed a moderate degree of collapse of the base and posterior border. There were a few small areas of collapse in the upper lobe. The heart was opened in situ while attached to the lungs in order to determine the cause of the infarcts. The veins of the chest and neck were engorged with blood, and the right ventricle when opened was slightly dilated, and contained a quantity of dark fluid blood. The tricuspid valve was normal in appearance. The pulmonary valve was intact and healthy, and the cusps normal. The right branch of the pulmonary artery was healthy and contained fluid blood. The left branch of the pulmonary artery presented no abnormalities, but on opening the branch running to the lower lobe of the left lung the scissor points grated on a metallic body. This was found to be the base of a rifle bullet which was very firmly wedged in the lumen of the vessel surrounded by a small quantity of fibrinous clot. The bullet was in perfect shape with its axis directed in the course of the vessel, and its apex wedged firmly into it, completely occluding its lumen, and by its lateral aspect blocking the opening of a smaller branch, thus causing the second infarct.

Weights of abdominal organs: Liver, 65 oz.; spleen, 10 oz.; right kidney, 4¼ oz.; left kidney, 6 oz. Weight of bullet, 10 g.; length, 2·8 cm.; circumference, 2·2 cm.; diameter of base, 0·7 cm.

Discussion.

From measurement in situ and standard measurements, the distance travelled by the bullet in the blood stream was not less than 2 feet (60 cm.). Since the blood pressure in the inferior vena cava in the normal condition stands at about + 3 mm. Hg and diminishes in the veins of the chest and right auricle to − 8 mm. Hg, while the velocity of the blood is not more than 25 cm. per second, it is probable that the blood pressure in the abdominal veins must have been greatly increased through the formation of the arterio-venous aneurysm, to have enabled the venous flow to sweep such a comparatively heavy weight as 10 g. along the veins. Raising of the venous blood pressure, no doubt, accounts for the continuously rapid pulse-rate, which never fell below 120 per minute, and for the rapid rate of respiration, 30–40 per minute, rising in the later stages to 60 per minute. The condition, in fact, was one in which the patient was bleeding into his venous circulation. This is supported by the comparatively low arterial blood pressure 95–100 mm. Hg and the full, soft, collapsing pulse. The raised venous blood pressure is evidently the cause both of the dilatation of the veins and of the rapid establishment of the condition of chronic passive venous congestion of the abdominal organs which was found post mortem.

Freedom of the blood stream from general infection and absence of suppuration at the site of impaction of the bullet were doubtless due to its uninjured and smooth surface. The absence of any pain at the site of the wound, the intense pain referred to the foot and leg, both at the time of receiving the wound and subsequently, combined with the complete absence of pain in the heart or lungs, are interesting features. Some anginal pain might have been expected during the passage

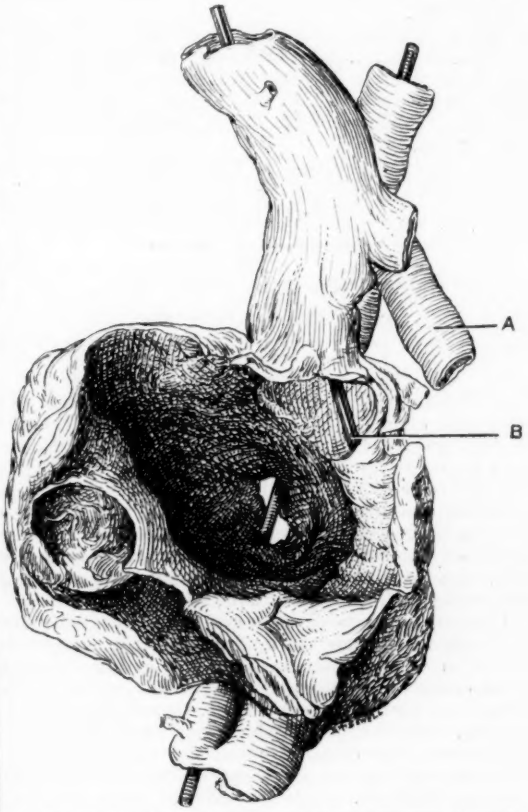

PLATE II.—Arterio-venous saccular aneurysm viewed from behind.

of the bullet through the heart, though the diameters of the pulmonary and triscuspid orifices are sufficient for the transmsssion of the bullet even in its long axis. As shown by X ray the bullet had passed above the level of the umbilicus before admission of the patient to this hospital. Probably the smooth surface of the bullet and its "stream-line" shape helped to lodge it so aptly in the pulmonary artery.

Summary.

The points of interest in this case may be summarised as follows:—

1. The distance and deflected course travelled by a rifle bullet in the blood stream.
2. The power of the right side of the heart to pump into, through and out from its chambers, a foreign body of this size without, moreover, any damage to its walls or valves.
3. The formation of two infarcts in the lower lobe of the left lung by the bullet acting as an embolus.

4. The absence of pain referred to the heart or lungs, the freedom from any syncopal attacks, and the absence of any infection of the blood stream.

5. The condition of marked passive venous congestion established in the short period of a month.

6. The length of time (one month) during which the patient lived with a bullet inside his circulatory system.

The specimen is exhibited in the War Museum at the Royal College of Surgeons (Catalogue number, W.O. 3071).

I am indebted to Lieutenant-Colonel S. G. Butler, D.S.O., R.A.M.C., for permission to use the notes of this case, to Colonel W. Pasteur, C.M.G., and Lieutenant-Colonel C. J. Martin, F.R.S., and Professor Arthur Keith, F.R.S., for their assistance and advice.

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MALARIA AND INSANITY.

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IN Macedonia malaria was reckoned as far and away the biggest factor in the causation of mental disease amongst our troops. Indeed, the admission-rate of the latter is almost an exact parallel of the malaria curve. The following notes were made of cases which comprise all those arising in the British Salonika Force (and subsequently in the army of the Black Sea), which were eventually admitted into the mental department from a period December, 1918, until October, 1919.

I have only included cases giving a positive history of malaria, whether or no this was the causative factor in the production of mental symptoms, and have endeavoured to arrive at a few conclusions about the psychoses caused by, or arising in, this protean infection. Both the benign and malignant tertian varieties occur, the latter predominating in the autumn months. Except in the causation of cerebral malaria, let it be said at once that no distinction could be drawn between the two for the purposes of this paper.

It appears to me that no new train of symptoms is set up by malaria, and that in comparison with any other acute specific fever it differs only in intensity and in the more selective action of its toxins on nerve tissue. The brunt of the attack falling on the cortical higher centres, we may get the train of symptoms of acute confusion of a cerebral type—the type of mental disorder which occurs very, if not most, commonly. To show a finer differentiation in its choice of nerve cell, I have seen four cases of single nerve paralysis due to malaria, two involving the sub-trapezial plexus alone, others the third and seventh cranial nerves. A heavy and more general segregation of parasites in the brain may give rise to the well-defined cerebral malaria.

Altogether during the above period there were 116 admissions to the mental department giving a positive malarial history. Both on the physical and mental sides they fall more or less into two groups of case: (I.) Those associated with the actual malarial attack itself; (II.) those occurring as a result of repeated attacks. The former are always the more acute and more approximating to a severe delirium. Other things being equal, the prognosis is better, and as a rule they yield easily and rapidly to appropriate treatment.

I. *Mental Symptoms in Association with an Actual Attack of Malaria.*

These comprise 32 cases, of which 9 were primary infections, the remainder occurring during a relapse. They showed that almost any of the recognised types of psychosis can be set up by the malarial parasite, but one symptom stands out prominently amongst them—namely, mental confusion. It was present in 22 cases, or 68·75 per cent. Next in order of frequency was depression, with 12 cases, giving a percentage occurrence of 37·5. Two cases of this group turned out to be cerebral malaria.

The degree of confusion may vary from what may be described as a severe delirium such as occurs in any pyrexia, to a complete dissociation of personality, the latter giving beautiful and typical examples of the occurrence of a definite fugue. These are so important that I will digress for a moment. They include in number 9 cases, while exactly the same number occurred in Group II., or apart from a definite rigor. But here comes out the value of the soil, as of this latter group, 2 were slightly feeble-minded, 2 gave a definite insane heredity, 1 had had St. Vitus's dance when young, and 1 gave a history of a similar attack previous to the malarial infection. In nearly every case some breach of military discipline had been committed, usually a court martial offence, and they were in consequence admitted to the department as prisoners. The commonest charge was, "Absent without leave," other crimes being self-inflicted wounds or destroying Government property In every case there was complete amnesia for the whole period, the shortest of which was a few hours, and the longest three months. One man had been convicted and punished for three similar happenings before his case was recognised, and he was sent down to the base for observation. This serious complication occurred so frequently, as compared with its incidence apart from malaria, that it seems as if this disease must be reckoned as an actual determining cause.

Two cases of acute delirium were started by the malarial attack. One of them is noteworthy owing to subsequent complications. He developed broncho-pneumonia in both lungs and finally meningitis, a pure culture of the pneumococcus being grown from the cerebro-spinal fluid. Eventually this man made an excellent recovery and was able to be invalided home as an ordinary medical case. With confusional insanity no memory of the acute illness was retained.

It has been noted that two cases of cerebral malaria were admitted. Diagnosis here rests on obtaining a positive blood-film. I have seen this very dangerous condition give a picture of cerebral hæmorrhage, of just drowsiness or simple delirium, of violent excitement and violence, or of epileptiform attacks. It was a condition we had always to be on the look-out for, especially during the autumn months, and it demands immediate and energetic quinine treatment by the intravenous method.

Lastly, in the cases of this group heredity played a very unimportant part, as a history of insanity was only traceable in 2 cases. Hereditary suicide was also given in 2, both of whom actually attempted their lives, thus bearing out the usual teaching on this point.

II. *Mental Symptoms as the Result of Repeated Attacks.*

Of the second class of case, 87 in number, alcohol was the cause of the mental disturbance in 7, while 9 suffered from varying degrees of feeble-mindedness. The latter were usually sent down in consequence of frequent entries on their conduct-sheets, punishment having no deterrent effect. In most cases they should never have been accepted for military service. One case was returned "Not insane." In the remaining 70, in which malaria was the determining factor, it was again found that any type of psychosis may be set up. But the prominent symptom is still mental confusion; and almost equally important is now that depression which one would expect to come on as a result of prolonged stress and toxæmia. These, most of them, had been conscious for some time previous to the actual breakdown of a failing in physical and mental vigour. After repeated malarial attacks, prolonged residence in a hot and unhealthy climate, with indifferent food and continual disappointment in the matter of leave, and sometimes bad news from home, it was no wonder that mind as well as body gave way. But heredity here comes in prominently as a factor. Of the 24 cases in which a diagnosis of depression is given an insane heredity was traced in 9; while in 31 cases of confusion 7 showed an insane heredity. In some of them this confusion cleared up in a day or two, others convalescing more slowly.

The onset of well-marked dementia præcox was determined in eight cases. The kind of disorder is shown in the following table, and except for particulars already mentioned they followed out more or less the usual experience in these cases.

Mental confusion	with a definite fugue ... 9		31
	simple 22	...	
Depression			24
Dementia præcox			8
Delusional insanity			6
Excitement with violence			1
Total			70

Now, where it is a case of chronic malarial poisoning there is always involvement not only of the cells of the higher centres, but the whole central nervous system shares in the attack. The sympathetic and vagus are affected, giving rise to abnormalities of pulse, tachycardia, palpitation, shortness of breath on exertion. There are frequently cardiac murmurs present, and marked coldness or even cyanosis of fingers and toes. Superficial and deep reflexes are always altered and generally markedly exaggerated. Knee and ankle clonus occur, and I have seen nystagmoid movements of the eyes. There is always a marked anæmia and debility, sometimes a profound cachexia. Spleen and liver are enlarged, and there is, of course, wasting and emaciation.

Prognosis and Treatment.

Unless other causes are at work the prognosis is always good, and is concomitant with improvement in health. Unfortunately, the malarial parasite, especially the benign tertian variety, is extremely resistant even to prolonged and energetic quinine therapy. But as soon as this was instituted, despite the tendency to relapse about the tenth day, patients at once began to mend. With cachectic conditions large doses of quinine are not readily tolerated by the stomach, and by upsetting digestion mitigate against the equally important assimilation of food. Intramuscular administration is of undoubted benefit under these conditions, and I have seen rapid improvement follow this when combined with intravenous galyl. Cacodylate of soda proved disappointing in my hands. And even though one was also frequently disappointed by the reappearance of malarial attacks soon after a course of intramuscular quinine injections, yet these patients always gained considerably in weight and improved in condition. On these grounds alone the course was justified, and in competent hands the method is practically free from risk of complications. The importance of correct and appropriate treatment is a point that is brought out most prominently. It was quite common to be given a history of frequent relapses treated casually with occasional doses of quinine, and no attempt made to control the attacks. Although it is true that the mortality from this disease is extremely low, it must be borne in mind that a potent and powerful poison is circulating all the time, which may flare up at any moment into an acute condition such as cerebral malaria, or result in permanent damage to mind and body.

All cases of malarial psychosis should be removed at once from danger of reinfection. This, with us, was the slowest of processes, and the waiting list of men marked "Hospital Ship" somewhat resembled that of any popular motor-car manufacturer at the present moment. It would be interesting to trace the subsequent history of one's cases, but this proves almost impossible in practice.

Prophylaxis.

I should say that the majority of the cases in Group II. might have been prevented had the true meaning of the danger signals which they had been showing for some time previous to admission been realised. The spirit of "Carry on" does not always lead to the happiest results, at any rate for the individual. But I had men sent for admission in whom the watchful eye of the regimental medical officer had spotted incipient signs. One can say definitely that these cases were saved from proceeding to a well-defined psychosis, and were quickly ready to be evacuated as ordinary medical cases, by this means being saved the undoubted stigma which the word "mental" carries.

As regards malaria itself, I think the theory of quinine prophylaxis has been definitely exploded. Keep up body resistance by good feeding and ordinary hygiene, and place no reliance on drugs.

Dealing with mental cases in the prodromal period, it was interesting and instructive to be able to watch the lines along which definite insane ideas seem to crystallise out. Most of us feel that in preventive medicine lies the future of our science. This, as applicable to mental disorders, is just as hopeful as in any other branch.

One looks forward to the time when mental hospitals, properly equipped, will be set up and run along modern lines, with skilled nursing and the advice of specialists in every branch of our science coördinated, where the atmosphere is one of recovery and not chronicity, and where patients will themselves voluntarily come early for advice, if not for admission. But for this to accrue such a hospital must be removed as far as possible from the word "lunacy." Asylums will unfortunately always be necessary for a certain proportion of cases, but an acute recoverable patient should never see the inside of one of these institutions.

THE BONE DEFORMITIES OF RENAL DWARFISM.

BY HUGH BARBER, M.D. LOND.,
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IN the last few years a number of cases of interstitial nephritis in children associated with stunted growth have been recorded, some of them with infantilism in all its characteristics, others merely with a marked degree of dwarfism. Until some standard text-book gives a full account of this condition it is not easy to select a suitable name; but as the kidney disease not infrequently has a very insidious onset, and many of the cases seek advice for the first time for want of development or bone deformity, some name such as renal dwarfism may be used. There have been several cases recorded in which an operation has been performed for genu valgum and the patient has died shortly afterwards. Three cases of this disease were recorded from the Derbyshire Royal Infirmary in 1913,[1] and a fourth in 1918,[2] all proved post mortem; but the three cases in this paper demonstrate the insidious nature of the disease and the deformities so well that a further note on the subject may be justified.

Interstitial nephritis in children is usually a somewhat insidious disease, characterised by stunted growth, an unhealthy pallor of the face, urine of low specific gravity, varying from 1010 to 1004, and the presence of albuminuria, small in amount and not always present constantly. But a severe case may show a degree of polyuria and thirst equal to that met with in diabetes insipidus. The cardio-vascular changes are slight, it is not easy to demonstrate thickening of the arteries, hæmomanometer readings are not high, and there is little hypertrophy of the left ventricle. Deformities of the bones, very similar to those of rickets, are frequently present by the time the patient approaches the age of puberty. Dwarfism, amounting to true infantilism in some cases, is a marked feature. In the eight cases that have been under my observation development has been fairly normal until the age of 5 or 6 years, after which growth has been very much retarded. The usual age of onset is hard to determine on account of the insidious nature of the symptoms. The fatal cases have died of uræmia without much warning, most commonly about 16 years of age, and probably no case reaches adult life. Post mortem the kidneys are small, the capsule strips easily, the cortex is shrunken, and microscopically there is interstitial nephritis. The ætiology is obscure and the history of any antecedent infectious disease is not a feature. In one or two recorded cases the Wassermann test has been positive; there have been no evidences of congenital syphilis in the cases I have seen and only one positive Wassermann result out of six cases tested.

Deformities Discussed in Detail.

To discuss the deformities in detail:—

(1) *Frequency of occurrence.*—Out of the eight cases five have shown bone deformity, but this does not enable one to discuss the percentage, because four of these five first sought advice for genu valgum; the signs and symptoms of kidney disease are more or less latent, and there may be cases of interstitial nephritis which are never diagnosed at all.

(2) *Age of onset.*—The deformities appear to develop about the time of puberty. I have a very definite history on this point in four cases, and the fifth (Case 1 in this paper) was diagnosed at 12½ years as interstitial nephritis with dwarfism, without bone deformity, and returned on account of recently developed deformities when aged 16 years.

(3) The *genu valgum* appears to develop comparatively quickly, straight legs becoming markedly deformed in a few weeks.

(4) In *type* the changes seem to be very similar to those of rickets; the wrists and knee-joints have been most noticeably affected, but some swelling has been palpable at the junctions of the ribs and costal cartilages.

FIG. 1.—Radiogram of the wrist in a case of renal dwarfism, showing zones of proliferation at the epiphyseal lines and irregular calcification. (Case 1.)

(5) *X ray notes* by Major A. E. Milner (see Fig. 1): The changes are most marked at the wrists and knee-joints; there is increase in the size of the proliferation zones, the normal translucent line is greatly increased in breadth, there is not only enlargement, but great irregularity and want of definition due to irregular calcification.

Notes of the Cases.

CASE 1.—W. M., aged 12½ years. First attended in January, 1915, for thirst and polyuria; height, 4 ft. ½ in.; heart and arteries normal, hæmomanometer reading 100 mm.; urine, sp. gr. 1006, albumin present 1 part per 1000, total quantity 41 oz. in 24 hours. He was under observation for three months, and there is a note that no deformities were present. He has had no infectious disease. His next attendance was 3¼ years later, aged 16 years, for deformity of the legs. He gave as history that he was at work until he had influenza three months previously, that he was in bed four weeks, and that when he got up his legs were crooked. (See Fig. 2.) On examination: height 4 ft. 4 in. (ten inches below the average), knees and wrists swollen (Fig. 1), legs deformed as in photograph; urine as before. Wassermann negative. Family history: Father alive and well; mother died of chest trouble; one sister, who died of pneumonia; two brothers, the elder a sailor and the younger also healthy.

CASE 2.—M. W., aged 13¾ years. Has always been small, walked when two years old, development has been poor since about six years of age, has suffered from thirst all her life, has never had scarlet fever or any other serious illness. She attended medical out-patient department when aged 6 years for blue hands and feeble action of the heart; the urine was not examined. About Christmas, 1918, the legs became crooked, when child was aged 13 years. Admitted September, 1919, for genu valgum and dwarfism; height 3 ft. 9 in. (ten inches below the average), legs deformed (see Fig. 3), knees and wrists swollen, slight beading of the ribs; urine, sp. gr. 1004, albumin a trace (tested on 30 occasions, absent twice), total quantity in 24 hours about 40 oz.; heart and arteries normal; hæmomanometer reading 90 mm., Wassermann positive (tested twice). X ray photos of bones similar to Case 1. Family history: Father and mother healthy, one of seven children, the first two died soon after birth, patient is the third, the others are healthy.

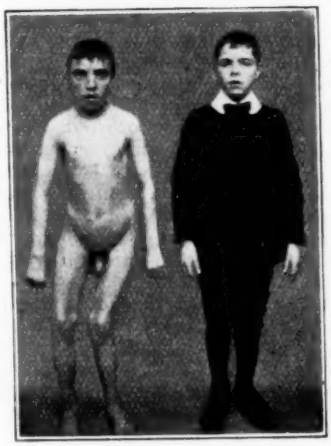

FIG. 2.—Case 1, aged 16½ years; brother, aged 12 years.

Note.—Case 2 has since died of uræmia; the kidneys were very small and fibrotic, weighing 220 gr. each; microscopically well-marked interstitial nephritis.

CASE 3.—Girl, aged 13 years. Admitted September, 1919, to the surgical side for genu valgum, which had developed 16 months previously. On examination height 4 ft. 4 in. (three inches below the average), pubic hair present; urine, sp. gr. 1008, albumin present, one part per 1000 (examined on 22 occasions, absent twice), total quantity about 50 oz. No cardio-vascular changes; hæmomanometer reading 100 mm. Wassermann negative. Ten years ago she was in this institution diagnosed as diabetes insipidus; urine, sp. gr. 1008 to 1010, albumin not found. She contracted scarlet fever and was transferred to the isolation hospital. The mother says she has always been thirsty and the legs weak, but was otherwise well; had had an attack of measles. Family history: Father and mother healthy, one healthy brother, one brother died of heart disease.

FIG. 3.—Case 2, aged 13 years; sister, aged 11 years.

Facts Showing the Insidious Nature of the Disease.

The following facts, which appear in the notes of the cases, may be selected to emphasise the insidious nature of the disease.

(*a*) Case 1 was diagnosed at my out-patient department, aged 12½ years, with straight legs; he attended for a month or two and returned three and a half years later on account of recently developed genu valgum.

(*b*) Case 2 attended as an out-patient under one of my late colleagues seven years ago for "weak action of the heart" and blue hands; urine not examined.

(*c*) Case 3 was admitted to this institution ten years ago, diagnosed as diabetes insipidus, with urine of low specific gravity free from albumin. She was sent up this time as a surgical case of genu valgum.

References.—1. H. Barber, Brit. Med. Jour., November, 1913. 2. H. Barber, THE LANCET, 1918, i., 142.

AN IMPROVED TECHNIQUE FOR THE STAINING OF SPUTUM FOR TUBERCLE BACILLI.

BY A. DISTASO, D.SC.

THE routine examination of sputa for tubercle bacilli conducted on any large number of specimens precludes the use of the many methods of concentration, of which the antiform method is probably the best. The errors inherent in the ordinary spread slide method are numerous, and no doubt account for the unsatisfactory results obtained. The method here outlined overcomes some of the difficulties and raises the percentage of positive results by at least 25 per cent., besides affording a film which is restful to the eye and easy of manipulation. It takes less time in execution than the ordinary method. The method allows for twice the usual amount of sputum, secures the easy solution of the tough muco-purulent pellets, and gives an even film and a very transparent counterstain.

A thick portion of the sputum or several muco-purulent pellets are selected and transferred to the slide. One drop of 5 per cent. NaOH is added and the sputum emulsified, with the aid of heat, into a transparent gelatinous mass, which is spread evenly and set to dry in the incubator. When perfectly dry it is immersed in fuchsin, warmed to incubator temperature, and allowed to remain in the incubator for 15 minutes. It is then washed in equal parts of Esbach solution and water, decolorised with 25 per cent. nitric acid until faintly pink, and then washed in water, in 60 per cent. alcohol, and then again in water. The counterstain used is malachite-green (1 part of saturated alcoholic solution in 19 parts of water) for 30 seconds to one minute, and the slide is rinsed and dried.

Six thousand sputa have been examined both by the routine method and by this method, in which positive films show two to three times the number of bacilli. In my statistics the ordinary method yielded one positive film in four, in the new method one positive in three. Malachite-green gives a soft pleasing ground-work in strong contrast to the bacilli and materially lessens the labour of the search. Large numbers of slides can be manipulated in mass.

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RESECTION OF THE RECTUM FOR CANCER.

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(With Illustrative Plates.)

HITHERTO operations for the removal of the rectum for cancer have compared unfavourably with such operations as removal of the breast, &c., chiefly because they have been accompanied by a high mortality, or because they were only possible in a small proportion of the cases seeking treatment. The dangers of the operation have been mainly two—shock following a long and serious operation in an elderly patient, and sepsis.

The technique of the operation here described has been slowly evolved, and it has the advantage of overcoming to a large extent both these difficulties.

I have for some years been trying to find a technique which would enable me to remove the rectum for cancer with a reasonable degree of safety and without the serious mortality which has hitherto accompanied rectal excision, and which would be applicable to all cases where the growth had not already invaded vital organs or set up metastatic deposits. The fact that in 1918, the fourth year in which I had used this technique as a routine method for growths of the rectum, the mortality was nil, although the largest number of operations were performed in this year (24), has encouraged me to think that the details of this operation are worth publishing.

Mortality and Causes of Death.

During the last four years I have used this technique in removing the rectum for cancer in 65 cases, of which 37 operations were performed in hospital and 28 cases in private. Five deaths occurred among the hospital cases, and no deaths among the 28 private cases. The most satisfactory feature, however, is that during 1918, when I and my assistants had had more experience with the technique, the mortality in the 24 cases operated upon during the year by this method was nil.

Year.	Number of cases operated on.	Number of deaths.
1915	8	1
1916	16	2
1917	17	2
1918	24	0
Total	65	5

The mortality from operation during the four years covered by the figures accompanying this paper is higher than it should be, as two of the deaths were exceptional and not attributable to the operation. Thus one patient died from hæmophilia and one died suddenly from cerebral embolism 13 days after the operation. In the former case the patient had come all the way from South Africa on purpose to have the operation, and was known to be a congenital hæmophiliac. He fully understood the special nature of the risk he ran, but wished to have the operation performed. The pathologist was called in, and three weeks were spent in getting his blood coagulation-time up to the normal before attempting the operation. In spite of this, however, the typical bleeding occurred, and proved fatal ten days after the operation. Of the other three deaths two were due to sepsis and one to hæmorrhage.

Advantages of Method of Operation Used.

The technique of the operation described here makes it possible to perform an absolutely aseptic operation from start to finish, and so abolish the chief cause of mortality—namely, sepsis in some form or another. Owing to the fact that the removal of the rectum of necessity leaves a large cavity, which cannot be filled up except by blood clot, primary union only occasionally occurs. More commonly there is a small cavity which heals by granulation in the course of three or four weeks. Convalescence, however, should run an aseptic course with a normal temperature. In some cases primary union has been obtained, and the wound has remained perfectly dry after the third day. Such cases have generally been women in whom the pelvic organs readily fall backwards and fill up the cavity left by the removal of the rectum.

The other great improvement in the technique has been the method of anæsthesia. It was recognised that two things must be aimed at—complete protection from shock in any form, and absence of vomiting after operation. Vomiting is particularly undesirable after excision of the rectum because it tends to break down the new peritoneal floor of the pelvis and produce a hernia in the wound, and it also tends to set up secondary hæmorrhage. The necessary conditions have been attained by using gas and oxygen, or twilight sleep, combined with spinal or local anæsthesia. No other anæsthetic at all is used. When spinal anæsthesia is used great care is taken to see that the patient is kept with the head slightly down from the time that the anæsthesia begins until all sensation in the legs has returned. This is, I believe, most important in protecting the patient against the effects of gravity during the time that a large part of his vaso-motor system is paralysed. As a result of this precaution there has been only one case of slight headache in all the cases and no other after-effects. Local anæsthesia gives equally good results, but is more troublesome.

One very marked advantage of this technique is that it has rendered it possible successfully to excise the rectum of patients in whom operation by any other method would have entailed impossible risks. I have not hesitated in the last three years to perform excision in patients as old as 73, provided other factors were favourable, and also in cases where other serious disease was present; and so far my confidence has been justified in that all the patients have pulled through without mishap. There were 20 patients over 60 years of age and 4 over 70. Two patients had bad chronic bronchitis, one had albuminuria, one old-standing locomotor ataxia, one bad Graves's disease with a pulse of 130. All these patients came through without complication.

It has long been my view that no operation for cancer of the rectum can be considered satisfactory unless it can be used with a reasonable degree of safety in cases where the patient is a bad subject, as the majority of patients suffering from cancer of the rectum are necessarily bad subjects owing to fat, age, or complicating disease. An operative technique which requires that the patient shall be a first-class subject will either be accompanied by an appalling mortality or will only be available for a small percentage of the cases requiring treatment.

This operation is suitable in any case where the growth is at the anus or anywhere in the rectum proper, provided that it is not fixed to important structures. It cannot be performed if the growth

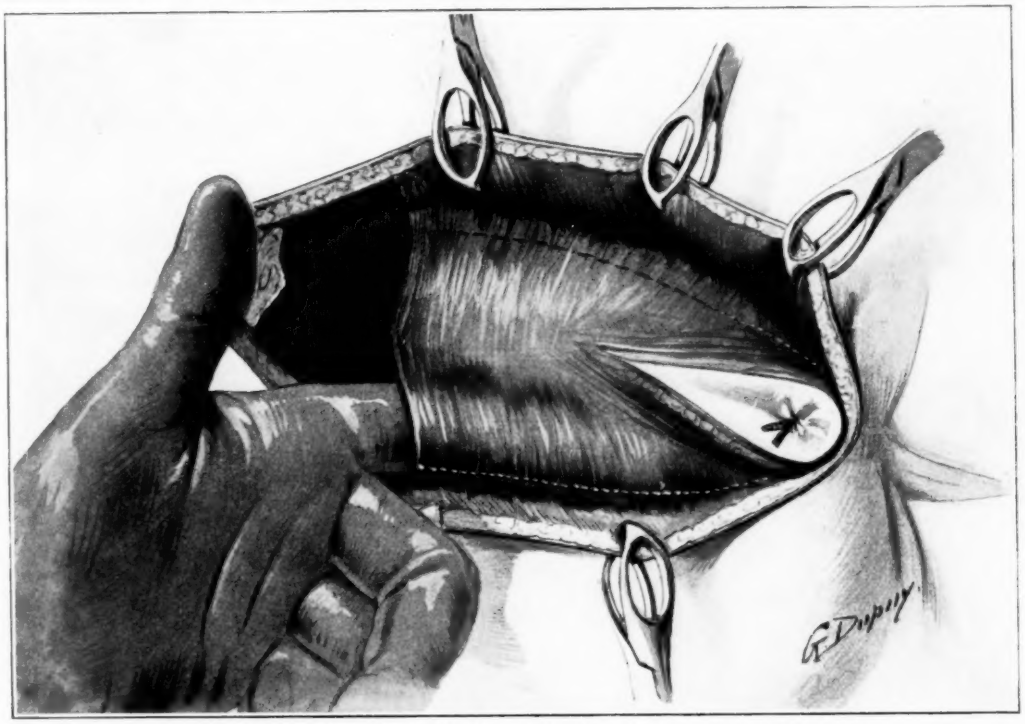

PLATE I.—Showing the method of dividing the fascia and levator ani muscle where it is reflected from the pelvic wall on to the rectum. The first finger is passed deep to the muscle and the division made with scissors along the dotted line, the lower side being cut first. Previous to this the fascia is cut through transversely as shown.

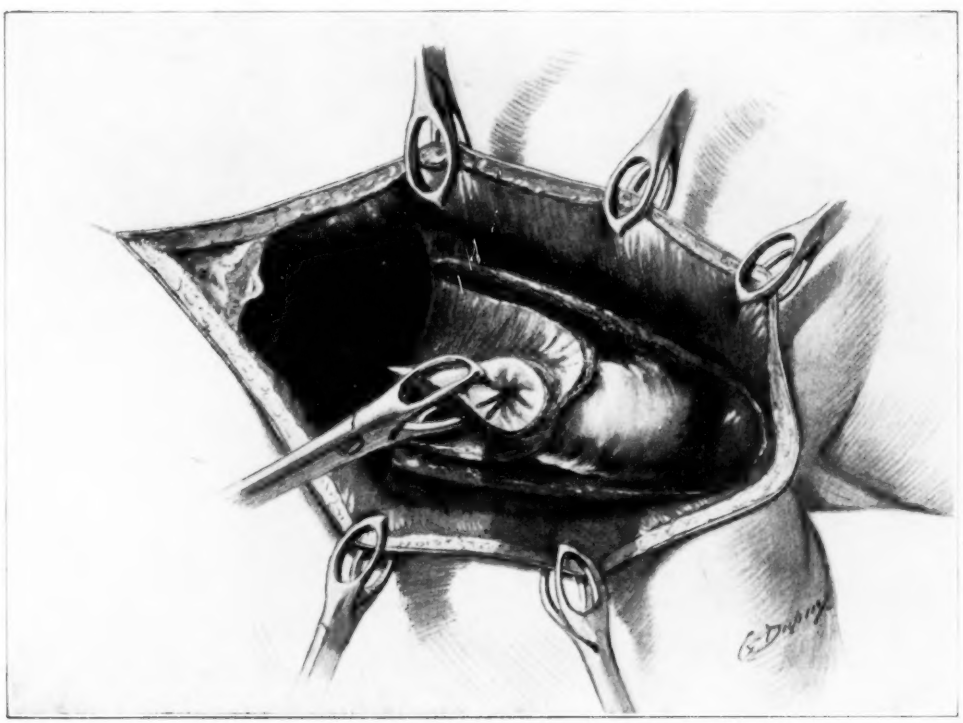

PLATE II.—The rectum is being freed in front from the urethra and prostate. This division is made with blunt-pointed scissors, guided by a catheter in the urethra. When the prostate is reached the rectum can be stripped quite easily until the peritoneum is found.

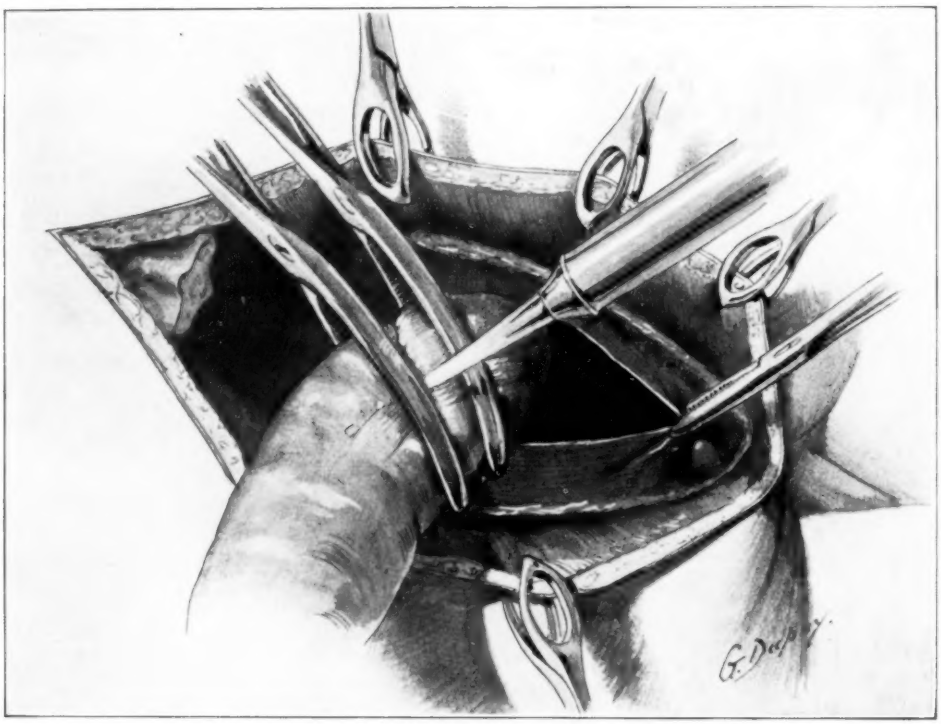

PLATE III.—The rectum has been freed and the peritoneal cavity opened. The meso-rectum has been tied off. Two clamps have been applied to the sigmoid and the bowel is being divided between them with a cautery. The peritoneal cavity is shown open; in reality it would be packed off with gauze tampons, as would the whole wound.

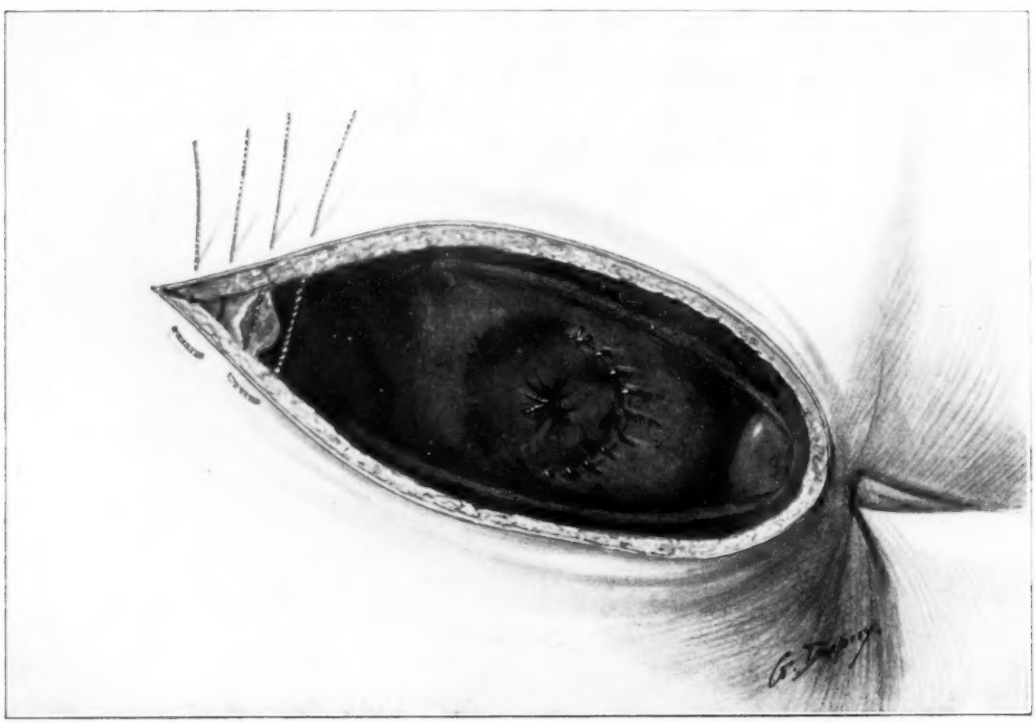

PLATE IV.—The completion of the operation. The end of the bowel has been closed and invaginated and the peritoneum sewn up. The skin wound is being closed with mattress stitches.

is at or above the recto sigmoidal junction unless the growth is small and the sigmoid fairly lengthy.

Description of Operation.

The operation is performed in two stages as a rule, but this is not essential unless the patient is old or unless some degree of obstruction is present. The first operation consists of a colotomy performed through the left rectus, fairly high up; this is done under gas and oxygen and local anæsthesia. At the same time the opportunity is taken of examining the abdomen for secondary deposits and, if necessary, the upper limits of the growth for adhesions to the bladder, &c. The colotomy is opened two days later, and the lower bowel and rectum are then washed out daily from the lower colotomy opening. In cases where the growth is small and situated near the anus it is often possible to leave the patient with a sacral anus if there is any special reason for doing so.

The second operation is performed a week or ten days later. The patient is not starved beforehand; he is only deprived of breakfast on the morning of operation. Heroin or morphia and atropine are given about three-quarters of an hour before operation unless "twilight sleep" is being used, when scopolamine and morphia are substituted. The operation is performed in the left semi-prone position. Before beginning the operation a No. 8 gum elastic catheter is tied into the bladder, if the patient is a man, in order to act as a guide to the urethra during the operation. The first step in the operation is to pass a stout silk ligature round the anus subcutaneously with a curved needle. This is tied up tightly so as to exclude the anus entirely. After this the skin all round is thoroughly painted with iodine and the towels are put in place. The surgeon does not wash up or put on his gloves till after he has closed the anus. The incision is made starting from the base of the sacrum and carried forwards in the mid-line surrounding the anus, and well clear of it to meet about 1½ inches in front. This incision is then deepened, cutting well away from the rectum into the fat. The coccyx is disarticulated, or, in case this should not give room enough, some of the sacrum is removed. The deep fascia is opened just in front of the sacrum, and the first finger of the left hand is passed deep to the left levator ani muscle, and the latter cut well away from the rectum with scissors. The same is then done on the right side. The next step is to dissect the rectum away from the prostate or vagina in front. This is easy in the female, but rather difficult in the male. The catheter tied into the urethra is a useful help as it can be felt through the wound, and prevents one from getting in front of the prostate. This part of the dissection must be done boldly with scissors, care being taken not to injure the rectum, as this would involve a septic wound. After the wound in front of the anus has been deepened about 2 inches the lower edge of the prostate will be reached, and the rectum will strip easily. The peritoneum will now come into view and should be opened and cut back along the sides of the rectum. The rectum and growth are now free except above. The mesorectum is now cut through as high up as possible, and the vessels in it caught with forceps and tied off. Only the bowel now remains to be divided. This is done between two clamps with a Paquelin cautery. The stump of the sigmoid in the upper clamp is now invaginated by a catgut Mickulicz stitch, and further protected by a mattress stitch outside this. The peritoneum is next closed by a continuous catgut stitch. The wound is then closed except for a single drainage-tube at the lower angle. Lately I have discarded the drainage-tube entirely. The operation has sometimes been performed in 35 minutes, and unless special difficulties are encountered it should not take more than 45 minutes. If in a female the posterior vaginal wall is involved it may be removed together with the rectum. In several cases I have removed the whole posterior vaginal wall, and in one or two cases the greater part of the prostate; in one case also a large portion of the posterior wall of the bladder.

After-treatment.

The patient is generally out of bed in 14 days, and usually able to return home in three weeks. There is one factor in the after-treatment which is a departure from common practice—namely, that ordinary solid food is given from the start. No alteration in the patient's usual diet is made, and he is given an ordinary meal as soon as he wants it. Beef-tea and milk are strictly forbidden. To ensure asepsis of the wound 1–20 carbolic dressings are used and changed twice daily.

Question of Recurrence of the Growth.

It is obvious that these cases are too recent to afford any useful guide, but my impression to date is that the results are quite good on this count.

The Degree of Disability.

This is very important, and difficult to gauge accurately. The resulting disability is almost entirely due to the colostomy opening. It is undoubtedly much less than in cases where a sacral anus has been left, as there is no trouble from prolapse of mucous membrane with a modern colostomy opening.

Out of 17 hospital cases in whom it was possible to investigate the disability from a wage-earning point of view, it was found that 12 had returned to work within a year of operation; 4 had not, and 1 had been obliged to take a lighter job. Those returning to work included persons in the following occupations: engine-driver on the railway, actor, washerwoman, workshop foreman, drapery assistant, munition worker, physical drill instructor, and stevedore. The disability would appear to be surprisingly little.

Summary.

The chief points in the operation are:—

1. The anus is sealed up before the operating field is prepared, and at no stage of the operation is the bowel mucosa exposed.

2. The freeing of the rectum in front is done from the perineum upwards; the only guide during this dissection in the male is a catheter in the urethra. Once the prostate is reached the dissection is easy, but care must be taken not to open the rectum.

3. The peritoneum is opened from the front of the rectum when reached.

4. The bowel is divided with the cautery between clamps, and the end invaginated.

5. The wound is closed, and the drainage-tube, if used, is removed in 36 hours.

As regards the blind portion of bowel below the colotomy opening, I have never seen any trouble result from it beyond a sinus which in a few cases persisted for some months. I have two cases in which this operation was performed over seven years ago, and neither of these patients suffers any inconvenience from the blind portion of bowel.

DIRECT INFECTION IN TUBERCULOSIS.

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THE large number of possible sources of infection make it difficult to estimate the frequency of direct (patient to patient) infection in tuberculosis, but the existence of the difficulty is no reason why an attempt should not be made. The question can best be studied in rural or semi-rural districts, such as South Devon mainly presents. Moreover, the work of tuberculosis officer in South Devon is carried out entirely in the *homes* of the patients, thus affording far better opportunities for such observations than any work done solely at dispensaries, sanatoriums, or hospitals. As an illustration may be cited the case of a girl, aged 20, living in an isolated farm, who developed acute tuberculosis and died within three months of the onset. Taking a history in the usual way, there did not seem to be any likelihood that she had been in contact with another case of tuberculosis, but on examining, among others, a brother, who seemed breathless, and an aunt staying in the house, who had a cough, both showed physical signs of pulmonary tuberculosis. The aunt's sputum contained tubercle bacilli; the brother refused to send his sputum away for fear the result might interfere with his dairy work. Apart from a home examination these two cases would never have been discovered.

Method of Investigation.

In considering the probable origin of each case four headings have been used.

I. Immediate infection.—This corresponds to "direct" infection, as the term is generally used, and is here applied to cases known to have been in intimate contact with a source of infection within a short time of the development of their first symptoms. For example, a woman with advanced tuberculosis stayed at a farm on the moor from February to July, when she died. A child of 13, one of a family of five occupying the house, began to be ill in May, and in August was laid up with a large pleural effusion, apparently of tuberculous origin. This is classed as *immediate infection*. The word immediate is used to differentiate this class from the next.

II. Remote infection, in which the patient has been known to be in intimate contact with an infective case, either in early life or at some time separated by an interval of years from the appearance of the first symptoms.

III. No traceable infection.—This explains itself.

IV. Doubtful.—These are cases in which the evidence of immediate or remote infection is not sufficiently clear to bring them under these headings, while yet the probabilities of a direct infection are too great for them to be classed under III.

The history of all these cases was taken before the idea of the present paper had occurred to me, so that the results are not coloured by any preconception. The control cases were those seen for the sake of an opinion or after notification, but which were diagnosed as non-tuberculous either at the first visit or later. The history of these was taken in exactly the same way as the rest, and before a diagnosis was made.

Results.

In a first series of 252 cases of all ages and both sexes 102 were found to arise from immediate infection, 47 from remote infection; in 78 there was no traceable infection, and 25 were classed as doubtful.

An entirely new series was then started, this time excluding all patients under 16. This gave, out of 316 adults, 140 due to immediate infection, 44 remote, 112 no traceable infection, and 20 doubtful. Among 96 children under 16 we found 71 cases of immediate infection, 2 of remote, 22 no traceable infection, and 1 doubtful. Out of 102 non-tuberculous control cases, investigated in the same way as if they had been tuberculous, 5 could be classed as cases of immediate infection, 7 as remote; in 84 there was no traceable infection, and 6 were doubtful.

There has been no selection of any kind for these series. Surgical tuberculosis, of which there were a number of cases among the children, is included, also invalided soldiers who, as would be expected, considerably increase the numbers of no traceable infections. For instance, out of 77 tuberculous invalided soldiers there were only 4 cases of immediate infection, 20 of remote infection, 51 no traceable infection, and 2 doubtful.

There are also included various birds of passage, visitors, in whose case a history of direct infection was harder to trace, and a few better-class patients who likewise swell the numbers of the no traceables. Unfortunately, I have not yet gone over a sufficient number of histories of the birds of passage and well-to-do patients to make a separate series of them. Eliminating the soldiers alone would bring the percentage of immediate infections over 50. The more the family and their movements are known to me the greater the number under the heading I.

Discussion.

The authoritative view, and the one most generally accepted, is that direct infection in tuberculosis is negligible, and that measures taken to prevent this are waste of time or almost useless. (Many, it is true, would admit an exception in the case of children.) Someone has said, "Whatever is generally accepted is usually untrue"; and although this is an over-statement for the epigram's sake, it is certainly unsound to regard anything as true merely because it is generally accepted. Cases of tuberculosis may be divided ætiologically into (1) those due to a remote childhood infection, often untraceable, which has been rekindled in later life by overwork, illness, poverty, or other debilitating influence; and (2) cases due to an immediate infection, at any period of life, with sufficient virus to break down the patient's resistance at the time. This may be a larger or smaller dose according to the resistance of the individual, but very few humans can withstand a dose of tubercle bacilli if it is sufficiently massive.[1]

The recognition of these two classes is most important in regard to measures for the elimination of tuberculosis. Better housing, better wages, and so forth are helpful, but whatever is done overwork, poverty (often due to laziness or self-indulgence), and illness can never be abolished, and so the first class is largely beyond our reach. On the other hand, cases of clinical tuberculosis due

[1] There are also intermediate cases between these two classes, in whom there is more or less broken health from the time of a childhood infection to a final, fatal breakdown in adult life.

to immediate infection can be prevented, and when we have gone so far it may well be found that incidentally the other class of case has ceased to occur.

The main channel of infection, and the only really important one, is from the sputum of a tuberculous patient. Bovine infection, urinary infection, and even the more important source from discharging sinuses, are all of secondary importance.

Fortunately, moreover, the majority of cases of pulmonary tuberculosis are not infectious, or only slightly so, if reasonable precautions are taken. It is the advanced case, that may take from 2–15 years or more to die, that is the danger (possibly also the so-called "innocent" cases). One such advanced case may in course of time give rise directly to 100 or more new cases, and indirectly to ten times this number. Yet in all discussions on the prevention of tuberculosis the speakers confine themselves to housing, poverty, sanatoriums, dispensaries, &c., and no serious attempt has been made to deal with tuberculosis as an infectious disease.

The attitude of the public, of our profession, and of the law towards infection in tuberculosis may justly be likened to "straining at a gnat and swallowing a camel."

On the one hand, I know of cases where the clergy have been unwilling to visit tuberculous patients on account of the risks. One wealthy man asked, through his solicitors, for the removal of a girl on his estate because she used to sit in a cottage garden within 50 yards of one of the roads to his mansion, though quite half a mile therefrom. The chairman of a hospital committee asks that a case of spinal caries be removed from hospital because tuberculosis is not allowed in the hospital for fear of infection. The house surgeon at another hospital refuses to admit a case of pleural effusion because "it is not fair to the other patients to admit these tuberculous cases!" The mistress of a maid who has a slight hæmoptysis will not allow her to remain in bed for a day or two in the house where she is in service, but insists on her immediate removal to the union infirmary for fear of infection. A medical officer of health insists on the isolation or removal of a boy at an orphan home because he has been notified as a case of tuberculous adenitis, when 30 per cent. of the other boys have a similar condition more or less marked. The risk of infection in all these cases was purely imaginary. This I call straining at a gnat.

On the other hand, I know of an infective case of tuberculosis engaged in distributing milk. His habits are none too clean. He goes out early in the morning, and has his morning cough over the milk. I know another case with about half an ounce of sputum daily, often highly infective, who is engaged as a butcher (although meat from a cow with a tuberculous udder is not allowed to be sold). In another case an untrained woman, who spends most of her time attending an advanced case of tuberculosis, spends the rest of her time in the dairy preparing cream and butter for the market. I am authoritatively informed that there is no legal remedy for any of these cases. The law recognises the danger of the relatively unimportant bovine tuberculosis, but does not trouble about an infective human. This is swallowing a camel.

I know again of one practitioner who advised a landlady to get rid of a lodger with glandular tuberculosis, quite uninfective; and of another who advised that a child with bronchitis should sleep with a grandmother who had advanced tuberculosis because it was warmer; yet another practitioner notified a man employed at a boys' school only after two years' treatment, and when the disease was far advanced, giving as his reason for the delay that if he had notified the case previously the man would have lost his job.

Illustrative Cases.

The following is an account of two cases which illustrate how tuberculosis is spread:—

1. An invalided soldier is found with his wife and two young children occupying two rooms. This patient is highly infective and brings up half a pint of sputum daily. He is sitting shivering over the fire before which the children are being washed. At his side in the fender is a dry spittoon with sloping sides; at the bottom of the spittoon is dry or drying sputum, on the sides are blobs of sputum, and starred all round the receptacle is more sputum where the patient has made "bad 'shots" at the spittoon. I was able to get this man a separate bedroom, and a few months later to persuade him to go into a tuberculosis hospital, where he died. When the family were seen again, four months after his death, the wife had been getting thinner and had physical signs of active disease at both apices, one child was ill with pulmonary and glandular tuberculosis, and the other a suspect. A child born since the husband's death was the only healthy member of the family. Others might interpret this as a case of hereditary predisposition and selective mating, but such an interpretation would seem far-fetched.

2. On another occasion I visited a young man of 25 in a seven-roomed house with nine inmates. The patient, who has advanced disease, lies in a room adjoining the kitchen and where the family frequently have their meals. The room is a sitting-room with a bed in it, and in the centre stands a large table. Alongside the patient's bed two or three newspapers are spread as a receptacle for his sputum, the mother informing me that he will not use anything else. Scattered over the paper are lumps of nummular sputum in varying stages of desiccation. On the carpet beyond the papers are a few more nummuli, and on the table leg there is a mass which has hit the leg high up and trickled downwards some 18 inches. Between the papers and the door, and on into the front room, are traces of sputum carried on the feet of visitors. The patient has since died of tuberculosis, and also one sister; one brother has been in a sanatorium recently, but is still ill; another sister is in a sanatorium now. I have not examined all the household yet, as the family consists mainly of adults, and therefore difficult to find in at the same time; but so far all that I have seen are tuberculous, including a New Zealander who married a sister of the patient and went to live there. Yet these people were somewhat apathetic and careless about the whole matter.

I have sometimes found a little colony of tuberculous persons in a more or less isolated spot, such as one street of a village, and I am inclined to attribute the existence of the colony to conditions of infection similar to those described, rather than to the influence of the local climate or the prevalence of some special wind.

Reply to Previous Criticisms.

I should like also, if so permitted, to take this opportunity of replying to the kindly and courteous criticisms in an editorial published in THE LANCET of Oct. 11th, 1919, dealing with my paper on "conjugal tuberculosis."

1. The difficulty in comparing the work of some older writings in this field is that pulmonary tuberculosis meant to them what we should call advanced disease; they would not classify as tuberculous a patient with a few symptoms and physical signs, who gradually got better and not worse. Even now the surgical conception of a

tuberculous joint (knee, elbow, &c.) is that of advanced tuberculosis of the joint, though, indeed, there are many stages before a typical "white swelling" is produced.

2. It is said that German insurance offices do not reject persons because of a history of exposure to infection, even to conjugal infection. Writing under correction, I do not think this is true of countries other than Germany. Other factors come into the calculation, of course, but short of rejection I think the lives are usually "weighted" in one way or another. Moreover, the class of patient of whom I write does not come into insurance statistics to any extent, for, except perhaps in a "death club," they do not usually insure.

3. It is quite true that my figures apply to rural areas, but such an area is surely the most suitable for studying the spread of tuberculosis. Just as the dermatologist looks at the edge of an eruption to discover its nature, so problems of this kind are best investigated in rural areas where people do not move about much, and where the history of individual lives is much better known.

The objection that many cases included may be virgin soil is quite sound. I would add, virgin soil or relatively virgin soil (though, as a simile, a relative virginity does not appeal to me), meaning that in addition to cases receiving in childhood a dose of bacilli which protects them there are others whose dose is insufficient to give more than a slight protection. The number of the insufficiently protected, in town as well as country, must be very great, and accounts, perhaps, for a large number of our tuberculosis deaths. The number of children, moreover, who lose their lives in the process of immunisation is also great. It would surely be better to make our aim the *detuberculisation* of the community rather than fatalistically to regard tuberculisation as permanently inevitable and meet it only by indirect means. A similar view was held as to small-pox before Jenner's time.

4. The criticism concerning the influence of poverty is also sound. I do not think my statistics would apply to the well-to-do. Everyone must admit that if the resistance is lowered by subnutrition, worry, and overwork the liability to tuberculosis must be increased. But poverty also increases the possibilities of infection; it means more intimate contact with the patient, smaller rooms, and windows closed for the sake of warmth. Again, poverty is too often accompanied by ignorance of the risks of infection and of the most ordinary precautions. In a poor household one frequently sees a casual indifference to infection, or openly preached fatalism (generally by grandmothers), while among the better classes there exists almost a terror of infection, and the tuberculous patient is made a leper indeed.

5. With the last paragraph of the editorial I entirely agree. It is by no means necessary to separate all the tuberculous from the non-tuberculous. Massive infection is what really matters, and commonsense measures of prevention are all that is needed. But no such measures have yet been attempted.

To Dr. C. Muthu (THE LANCET, Oct. 18th) I would say that I did not intend my paper on conjugal tuberculosis to be a record of the "mere presence of tuberculosis among married people or among those living under the same roof," but a study of the incidence of tuberculosis among the mates of tuberculous persons *compared with* the incidence among contacts of tuberculous persons other than husband and wife, and *controlled by* an examination of the contacts of patients to be considered non-tuberculous. Moreover, I make no claim to be always right. If my conclusions are correct it is important that they should be recognised and acted upon; if I am wrong the truth will only shine more brightly for contact with my errors. To Dr. R. C. Holt (THE LANCET, Nov. 8th) I would say that he is probably quite right, but that I am anxious not to spoil a good case by any apparent exaggeration. (I was in general practice myself for several years.) Apart from public criticisms I have been surprised at the number who have written expressing agreement.

Suggestions.

I have no wish to decry in any way the attempts to improve housing conditions, to preach hygiene, and eliminate poverty, but we seem to get no further with tuberculosis, and I feel convinced that the only way to tackle the problem is to consider it as primarily and mainly a problem of infection, and to deal with it on these lines. So far, as I have tried to indicate, this has not been done. The Royal Society of Medicine discusses the problem, but infection is regarded as a secondary matter and comparatively unimportant, and I read in vain through the speeches at the recent antituberculosis congress for any sign that the speakers regard the problem as one of infection. Much has been, and still is, hoped for from the new Ministry of Health and its advisory council, but so far we seem merely to revolve more vigorously round the same circle: housing, hygiene, more sanatoriums, more dispensaries, elimination of poverty, better feeding, and so forth. Yet I believe that the present Government is more ready than any we have had in the past to act energetically for the benefit of the community, and on the right lines too, if only it is advised definitely and forcefully enough.

Apart from the application to tuberculosis of regulations similar to those in force for other infectious diseases there is an unlimited field for research in other methods of preventing the infection.

For instance, it occurred to me some time ago that chlorine being highly inimical to the tubercle bacillus the frequent inhalation of a spray containing dichloramine T. of suitable strength might render an infective patient less infectious or even non-infectious. Unfortunately pressure of work, and war time, have prevented me from going very far on these lines, but I am encouraged to continue, and similar experiments with other drugs might be tried. The inhalation of very diluted oxides of nitrogen seems to assist the prevention of influenza; may we not find some similar method of value in tuberculosis?

Then let us have written in plain English and scattered broadcast a short circular explaining that tuberculosis is an infectious disease, but that fortunately only a minority of those affected, and mainly advanced cases, are infectious to others, and setting forth also the best way to avoid infection. People want a clear lead in this matter. It is very little use to go on repeating to the public that there is no practical danger of infection when every educated adult member of society can recollect, in his own personal experience, what seem to him clear cases of infection. Such statements give him a mistrust for his advisers, and this reacts in more ways than one.

ON INDIARUBBER WOUND DRAINS.

BY ARTHUR EDMUNDS, C.B., M.S., F.R.C.S.,
SURGEON, KING'S COLLEGE HOSPITAL; SURGEON, GREAT NORTHERN CENTRAL HOSPITAL.

FOR some time past I have employed the following devices for drainage, which, though probably not original, have proved extremely useful.

1. It is often desirable to drain the rectum by means of a rubber tube inserted into the bowel to allow the passage of flatus and to prevent concealed hæmorrhage. For this purpose two large holes can be cut in the side of the tube opposite one another; the tube is then split down into these holes with a pair of scissors, giving an apparatus which Fig. 1 amply explains. The method of using this is shown in Fig. 2. The large holes weaken the tube at a definite point, and enable it to be opened out on a sort of hinge, so that the split

FIG. 1.

FIG. 2.

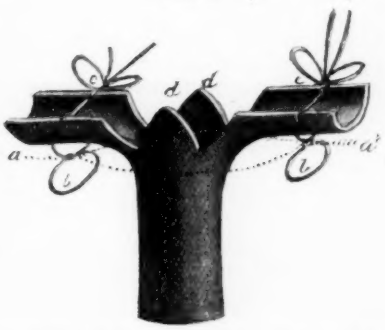
portions lie comfortably in the middle line along the natal cleft, where they are kept in position by a pad.

2. For the drainage of acute empyemata. This method of cutting a drainage-tube is shown in Figs. 3 and 4 and is a modification of the preceding device. I originally used the rectal tube which I have just described, but the movements of the chest wall tend to suck the tube in or to push it out, so that free drainage is obstructed. Fig. 3 explains how the tube is prepared. Instead of cutting a hole, a slit is made into the tube which marks out a flap like a Gothic arch. This is done on each side of the tube at opposite points, and the portion of the tube which is destined to remain outside the chest wall is split up, the incisions meeting the Gothic arches at their apices. The preparation of this apparatus only requires four snips with the scissors and can be carried out in a few seconds. When the split portions of the tube are opened out an apparatus is obtained as shown in Fig. 4. After the chest wall has been opened and pus evacuated, a suture should be passed deeply through the superficial tissues on each side of the centre of the incision, leaving room between them for the passage of the tube. These sutures, which should be of stout silkworm-gut, are then tied so as to leave two long equal ends. In Fig. 4 the wound is diagrammatically represented by the dotted line *a*.....*a'* and the stitches, where they pass through the skin and subcutaneous tissue, by the loops *b*.....*b*. The drainage-tube is then put into position and the flaps bent outwards so as to lie in the long axis of the wound where they are secured by tying around them the long end of the two sutures. In order to make this more secure two little cuts should be made on each side to take the stitch as shown at *c* in Fig. 4. The sutures holding the tube in place should be tied in a bow and left long.

The advantages of this apparatus are that (1) it is very firmly fixed to the chest wall and so does not slip in and out, and (2) the small flaps of rubber which have been described as resembling Gothic arches (Fig. 4 *d*) hold the sides of the wound

FIG. 3.

FIG. 4.

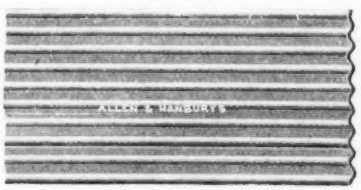


apart and prevent the skin falling over the mouth of the tube. This tube will remain in place as long as the stitches hold—that is to say, usually for a week or ten days, by which time the acute stage of the disease will be passed, and it will be possible to retain a drainage-tube with an ordinary safety-pin, if it has not been possible to remove it altogether.

To remove the tube in the early stages of the case all that is necessary is to untie the bow securing each half of the split tube, when the tube is quite free and can be drawn out of the chest. The sutures can then be re-tied and the tube is once more firmly fixed.

3. Drainage by means of corrugated rubber sheeting. Although for some cases the drainage-tube is indispensable, there are others in which it has its drawbacks, and I now use extensively the corrugated rubber sheeting, which has been prepared for me by Messrs. Allen and Hanburys. This substance (shown in Fig. 5) is made of fairly stout sheet rubber, and for many cases serves all the purposes of a drainage-tube, while possessing certain advantages.

FIG. 5.



At first I used this material rather tentatively, but I am now using it very largely, especially for temporary drainage after extensive operations, where there is likely to be a good deal of oozing, such as amputation of a limb, excision of the breast or glands in the neck, or removal of large renal tumours.

When a cavity has to be drained through a muscular layer—e.g., in draining an intra-abdominal abscess through a stab wound—I prefer a fairly stout tube, but where there is not much sepsis or where the drainage is a precaution mainly concerning the abdominal wall, a strip of corrugated rubber is more satisfactory.

For draining suppurating tracks, spaces under suppurating flaps—e.g., after an operation for

cellulitis—I prefer it to drainage-tubes. It is infinitely more comfortable for the patient than a tube, and can be removed practically painlessly. Owing to its flexibility it is less likely to cause trouble from pressure, but it is sufficiently stiff to allow of its re-insertion when prolonged drainage is necessary.

The material is made in sheets 12 inches long by 6 inches wide, from which strips can be cut of appropriate length and width. A length of an inch or so can be left hanging out of the wound, and when this tends to depress one side of the wound unduly the projecting portion can be split down to the skin level and the two halves turned back in opposite directions.

ON THE USE OF THE ACTUAL CAUTERY IN GASTRIC ULCER

BY JAMES KIRKLAND, M.B., C.M. GLASG.,
LATE SURGEON TO HOLBORN MILITARY HOSPITAL.

FOR five or six years I have used the actual cautery in place of the knife in treating some cases of gastric ulcer. My reason for so doing is threefold. (1) On several occasions on reopening abdomens for recurrent symptoms, after excision of gastric ulcer had been performed some time previously, I have found excessive contraction and cramping of the lesser curvature, which evidently caused acute angulation of the duodenum with the pyloric portion of the stomach, resulting apparently, in some cases, in duodenal ulceration. (2) In excision of the usual wedge-shaped portion of the stomach wall bearing the ulcer there is of necessity a great loss of tissue, which means loss of mobility and function, always a serious matter. (3) Excision alone, without gastro-enterostomy, frequently fails to relieve symptoms; this, in my opinion, may be largely due to the above-mentioned loss of tissue, mobility, and function.

With these considerations in my mind I decided to try some other method of treating gastric ulcer, which would as far as possible eliminate these unsatisfactory sequelæ. I am not an advocate for the excision of every excisable ulcer. With the use of the actual cautery excision is unnecessary, and there is a minimal loss of tissue, mobility, and function. Healing is rapid and satisfactory. We know that heat is one of our very best germicides, and we also know that with an adequate application its effects extend beyond the point of application to a distance of at least 2 cm.

Clinical Basis of Treatment by Cautery.

In cases where patients have survived untreated perforated gastric ulcer a cure of the ulcer and its symptoms follows. It is upon these two factors—viz., heat and perforation—that the efficiency of cautery treatment depends. To treat an ulcer satisfactorily with the cautery the stomach, and particularly the ulcer-bearing portion, should be sufficiently free and movable to allow of safe and adequate exposure. The majority of ulcers which rupture are on the anterior surface towards the lesser curvature, and it is just in this position that the cautery can most advantageously be used. It is also the most frequent site of ulcers which are excised.

There may be some doubt regarding the applicability of this treatment to cases showing signs of malignancy. It is probable, however, that it is even more efficient than the knife. It is an established fact that in both primary and secondary cancer of the stomach the line of demarcation between diseased and healthy tissue is sharply defined. If the diseased portion be excised with the knife with a fair margin, say half an inch, of healthy tissue, it is probable that the whole of the disease has been removed. We know that heat has a very powerful and destructive effect upon cancer cells, and that this destructive effect is exerted for some distance, at least an inch, in every direction from the point of application, assuming such application to be adequate. It follows that the disease may thus be eradicated with more certainty and less loss of tissue and function than is possible with the scalpel, always assuming that in both instances there are no metastases.

There is one important point also noted by American writers, who have just lately been using the cautery extensively, that hæmorrhage has not followed in one case so treated, whereas it is one of our greatest fears in knife excision.

Result in Cases Treated by Cautery.

So far my cautery cases are comparatively few. I have, owing to the war and its vicissitudes, lost the run of several. Two are of too recent a date to make any definite statement regarding them. The following eight I have seen within the last few weeks.

Perforated Ulcers (3).

(1) Male, age 31. Ulcer on anterior superior surface, perforated about 4½ hours; cured.

(2) Male, 35. Ulcer on anterior surface near pylorus, perforated about 3 hours; cured.

(3) Male, 49. Ulcer on anterior surface, perforated about 5 hours; cured; convalescence protracted owing to pleuritic infection. No subdiaphragmatic abscess.

Immediate gastro-enterostomy was done in all three cases.

Unperforated Ulcers (5).

1. Female, 43. Symptoms present about eight years; position of ulcer anterior superior surface, ? malignant; apparently cured.

2. Female, 29. Symptoms about four years; position of ulcer anterior; cured.

3. Male, 35. Symptoms present for an indefinite but considerable period; position of ulcer lesser curvature; cured.

4. Male, 52 (?). Symptoms present for an indefinite time; position of ulcer on lesser curvature, ? malignant; apparently cured.

5. Female, 33. Had "stomach trouble" all her life; two ulcers on and near lesser curvature; cured.

In all cases the ulcer was completely perforated with cautery point and gastro-enterostomy, either immediate or secondary, was done.

When treating an ulcer on the lesser curvature it is well carefully to isolate the crater by reflection of a small flap of gastro-hepatic omentum over the ulcer area. A small but definite point will be seen, which can scarcely be mistaken. This is the apex of the ulcer crater, and the spot through which the cautery point can be thrust. After thorough cauterisation the ulcer is closed by approximation and overstitching, and the reflected flap is replaced and sutured. Whether or not an immediate gastro-enterostomy should be done is for the surgeon to decide. No hard-and-fast rule can be laid down.

Conclusion.

This article has been written with a view to a discussion, so that the treatment by cautery may be established if considered worthy. I claim that by this method it is possible to deal with a larger percentage of ulcers than with the knife, with less risk to life, less loss of tissue, mobility, and function, and with greater certainty of sterilisation of the parts treated.

Wimpole-street, W.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF

GUNSHOT WOUND OF THE LARYNX

WITH IMPACTED FOREIGN BODY. OPERATION; RECOVERY.

BY J. WALKER WOOD, L.R.C.P. & S. EDIN., L.R.F.P.S. GLASG.,

LATE CIVIL SURGEON, HAMPSTEAD MILITARY HOSPITAL, AND CAPTAIN, R.A.M.C.

GUNSHOT wounds of the larynx with impacted foreign bodies not immediately fatal are of sufficient interest to justify the recording of the following case recently under my care.

Private L. J. W., 3rd Grenadier Guards, age 35. Wounded on 3/9/18. On admission to Hampstead Military Hospital on 8/9/18 his condition was as follows: small healed wound on right side of neck with some surgical emphysema around the wound, complete loss of voice, and a marked inspiratory and expiratory stridor.

Laryngoscopic examination (see Fig. 1).—Swelling of the left ventricular band, obscuring a view of the left vocal cord; swelling and œdema of left arytenoid and ary-epiglottic fold, partially closing glottic aperture. The right vocal cord was represented by a grey sloughy band, injured by the projectile on its passage across the larynx from right to left. The left side of the larynx was immobile and the movement of the right cord was limited. I decided that the foreign body was somewhere in the region of the left arytenoid. An X ray examination revealed the presence of a metallic foreign body in the region of the left crico-arytenoid articulation.

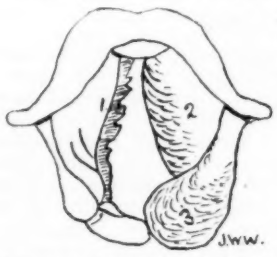


FIG. 1.—1. Laceration, right vocal cord. 2. Swelling and œdema, left ventricular band. 3. Swelling and œdema, left arytenoid and ary-epiglottic fold.

FIG. 2.—Foreign body. Actual size. 8 mm. × 9 mm.

For the following reasons I decided to attempt removal of the fragment: (1) the chance of septic perichondritis and œdema of the glottis occurring; (2) the possibility of dislodgment of the fragment with the grave danger of glottic spasm; (3) interference with the function and mobility of the left vocal cord.

The only operation which would give the necessary access being thyrotomy or laryngo fissure, after a consultation with Captain A. G. Wilkins, R.A.M.C., our anæsthetist, we decided upon rectal ether as the best anæsthetic. The operation was performed on 16/9/18.

Operation.—Thyrotomy incision. Median tracheotomy through isthmus of thyroid. There was considerable emphysema of tissues of neck, which increased the hæmorrhage at this stage of the operation and delayed its initial stages. Thyroid cartilage split from above and, after sponging interior with cocaine, sponges were packed down on convexity of tracheotomy tube and up into pharynx. The foreign body was located in the left crico-arytenoid articulation and removed. (See Fig. 2, actual size.) The muco-perichondrium of the wings of the thyroid cartilage having been drawn together with fine silk the tracheotomy tube was removed, the whole wound being closed except two sutures threaded, but untied at the lower angle of the wound. These were tied 48 hours later. The further progress of the case was uneventful. Following the operation patient developed slight bronchitis for a few days, but the voice was much stronger than before operation. For 48 hours there was slight air leakage through the lower part of the wound, but this rapidly closed; there was no dysphagia.

Present condition, 11/10/18.—The movements of the right vocal cord are normal. There is still some impairment of movement of the left vocal cord. Swelling of the left arytenoid has almost disappeared. The voice is still weak, but very much stronger than immediately after the operation and before it, and is strengthening daily.

Anæsthetic Note (by Captain A. G. WILKINS).

Intra-rectal ether advised in order to avoid (1) interference with surgeon, (2) post-operative bronchitis and sickness, (3) risk of cardiac muscle failure owing to sepsis and a dilated heart (patient had other very septic wounds): these conditions made chloroform inadvisable.

Pot. brom., gr. xx., given at 8 P.M., Sept. 15th. At 9 A.M., Sept. 16th, hypodermic injection: morphine, 1/6 gr., hyoscine, 1/150 gr., atropine, 1/100 gr.: at 9.15 A.M., enema of paraldehyde, ʒi., ether, ʒiv., and olive oil, ʒii., given as slowly as possible (eight minutes); catheter passed three inches within bowel. Enema retained. At 9.30 A.M. satisfactory anæsthesia, only faint corneal reflex. Colour and respiration satisfactory and patient removed to theatre. At 10.15 A.M., operation commenced, anæsthetic deepened by covering mouth and nose with towel. At 10.30 A.M. when larynx opened pledget of wool soaked in 10 per cent. cocaine and adrenalin swabbed round interior of larynx. Diminution in stridor followed. Pulse good. Breathing quicker. 11 A.M., operation completed. The bowel was then washed out to get rid of remaining ether. At 1.30 P.M. patient opened his eyes but was still dazed. 2 P.M., completely conscious and could understand, and reply to, remarks made to him. There was no sickness.

Remarks.

This is the first occasion that I have done a thyrotomy with rectal ether, and I cannot speak too highly of it as *the* anæsthetic for this operation. Its advantages are: 1. The anæsthetist is out of the way and the surgeon is not hampered with anæsthetic gear about the field of operation. 2. During the operation there is less coughing, which is apt to be troublesome when chloroform vapour is pumped in through the tracheotomy tube. 3. There is no struggling while the patient is coming round; a prolonged period of rest is followed by a good natural sleep without sickness. 4. There is less risk of post-operative pneumonia and bronchitis than when the anæsthetic is administered through the tracheotomy tube.

I desire to record my thanks to Captain Wilkins for the excellent anæsthetic and for his notes thereon; and to Dr. A. R. Roche, of Hampstead, for his assistance with the operation.

A CURIOUS CASE OF

EXTRUSION OF AN INHALED FOREIGN BODY.

BY GEORGE W. JOHNSON, M.A., M.B., B.CH. OXF.

ALTHOUGH it is well recognised that a foreign body after entering the air-passages may occasionally make its exit from an abscess in the chest wall, the occurrence is sufficiently unusual to render the following case of interest, in which the foreign body was a head of grass.

A girl, 2 years of age, was brought to me on July 24th with a fluctuating swelling, of about the size of a tangerine orange, in the right mid-axillary line, the centre of the swelling being over the seventh rib. The swelling was obviously an abscess, and was thought probably to be due to tuberculous disease of a rib. The mother could give no history beyond the fact that the swelling had been noticed for a week, and that the child up to that time had been in her usual health. The child was very difficult to examine, but no sign of any gross lesion in the lungs was detected. Operation was refused. A few days later the abscess burst, discharging a large quantity of pus. The child seemed ill and the temperature remained raised. About August 16th a head of "barley grass" 1¾ inch in length was discharged from the abscess. The mother then stated that about a week before the abscess was first noticed the child had had a choking fit, and that she had taken some similar grass away from her, but had not in any way connected the two events.

After the discharge of the grass the abscess rapidly healed, and at the time of writing (Dec. 17th) the child is in good health.

Gainsborough.

NOTE ON A CASE OF

ENTERIC CYST CAUSING INTUSSUSCEPTION.

BY C. W. G. BRYAN, *M.C.*, F.R.C.S. ENG.,

SURGICAL REGISTRAR, ST. MARY'S HOSPITAL; SURGEON TO OUT-PATIENTS, PADDINGTON GREEN CHILDREN'S HOSPITAL, AND HAMPSTEAD GENERAL HOSPITAL.

THIS case is placed on record on account of the rarity of the condition.

L. C., a boy of 6 years, was admitted to the Paddington Green Children's Hospital on May 29th last with a history of abdominal pain of one day's duration, accompanied by frequent vomiting. The bowels had not been opened since the pain commenced. Patient was subject to occasional attacks of constipation with headache and vomiting; otherwise he was always healthy.

Condition on admission.—A well-nourished boy of average development. Generalised abdominal tenderness, no rigidity. Circumscribed swelling palpable in the right hypochondrium. Nothing abnormal on rectal examination. Pulse 124, temperature 99°F., respirations 24. A simple enema was given without result. On the two following days the boy vomited occasionally, and complained of abdominal pain, but his general condition improved. On June 2nd, three days after admission, the bowels opened and frequent offensive stools were passed for two days; no pain or vomiting. On the 4th vomiting and pain recommenced, and lasted until the 7th. Bowels opened on the 5th.

The case came under my care on June 7th. The patient was now having paroxysmal attacks of extreme abdominal pain. Abdomen slightly distended. Visible peristalsis of small intestine. Indefinite tumour of right lumbar region, masked by rigidity. Face pale, anxious, and pinched. Pulse 120, temperature 100·2°, respirations 24. The history and signs then were clearly those of acute intestinal obstruction.

Operation.—Under general anæsthesia the abdomen was opened through the inner part of the right rectus. Small amount of clear fluid in the peritoneum. The ileo-cæcal region was delivered and an intussusception of the last part of the ileum, which had progressed less than one inch, was reduced easily. It was then found that there was a thin-walled cyst, the size of a tangerine orange, in the anti-mesenteric wall of the ileum. The cyst filled the lumen of the gut, two-thirds of it being in the ileum and one-third in the cæcum, the edges of the ileo-cæcal orifice constricting the cyst.

An effort was made to dissect out the cyst, but this could not be done easily, and the attempt was soon given up in view of the collapsed state of the boy and the dragging necessitated by the fixity of the cæcum. After packing off, the cyst was incised and a large amount of opaque fluid and jelly-like mucus was evacuated. The cyst was marsupialised by suture to the lower part of the abdominal wall incision. This caused some kinking of the gut, and the cyst wall appeared to form a considerable mass inside the lumen of the ileum, so a lateral anastomosis was made rapidly between the cæcum and the ileum proximal to the cyst. The abdominal wall was closed in layers with a strip of rubber tissue leading into the cyst.

I decided, working as I was through an incision near the middle line, that it was impossible without severe shock to dissect out the cyst, and for the same reason a primary ileocæcal resection was out of the question. Subacute suppuration of the interior of the cyst occurred, but otherwise recovery was uneventful, and the rest of the wound healed soundly.

Second operation on July 8th.—Spinal anæsthesia by a 5 per cent. aqueous solution of novocain. The old wound scar, with a sinus leading into the shrunken cyst, was excised from the abdominal wall and the general peritoneal cavity packed off. The cæcum and the terminal 6 inches of the ileum were excised, including the cyst and the lateral anastomosis which were involved in adhesions. End-to-end anastomosis of ileum to ascending colon was made, the end of the latter being closed each side to make its lumen correspond with the ileum. Abdominal wall closed in layers; right loin drainage for 48 hours. There was no marked shock and no vomiting. The bowels were opened on July 10th. A stitch abscess of the abdominal wall occurred, and the remains of a catgut stitch were removed on July 29th; recovery was then uneventful, the wound healed soundly, and the patient was discharged to the convalescent home on August 6th.

I saw him in October. He had a sound linear scar, had no symptoms of any sort, and appeared quite healthy.

Remarks.

Examination of the specimen shows the cyst situated in the anti-mesenteric wall of the ileum, close to the ileocæcal valve. In its shrunken condition it is 1 1/10 in. in diameter and projects into the lumen of the gut. Microscopic examination shows a thin layer of circular muscle in the inner wall of the cyst, so that it is intermuscular, as in the case described by Gfeller and mentioned in Keen's "Surgery."[1] Such cysts are considered to arise in persistent relics of the omphalo-mesenteric duct, and may occur between the fibres of the circular muscle of the intestine, as in my case, or may be subserous. Diagnosis has not been made before operation, but should be possible, if this rare condition is borne in mind, in the presence of a tumour with recurring attacks of intestinal obstruction. As a rule such a cyst could be dissected out of the gut wall and the muscle closed by suture. In the case that I record this was inadvisable owing to the inaccessibility of the ileocæcal region and the collapsed condition of the patient. An oblique iliac incision would have given better approach to the region.

I wish to express my thanks to Dr. E. H. Kettle for kindly examining the specimen, and to Miss N. E. Trouton, house surgeon to the hospital, for careful notes.

[1] Keen's Surgery, vol. iv., p. 679.

MEDICAL DEFENCE UNION.—At the meeting of the Executive Committee of the Medical Defence Union held on Dec. 22nd, 1919, the general secretary reported that three members had forwarded donations to the funds of the union as a mark of their appreciation of the services rendered to them by the union in cases in which they had recently had occasion to apply for assistance. One of the members stated that the amount of his donation (which was substantial) was really no measure of his gratitude.

Medical Societies.

GLASGOW MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this society was held on Dec. 5th, 1919, Dr. DOUGLAS RUSSELL, the Vice-President, being in the chair.

Dr. J. W. MCNEE read a short paper and gave a microscopical demonstration on

The Pathology of Irritant Gas Poisoning.

After pointing out that during the war a much larger number of gases had been employed by the Germans than was generally believed, Dr. McNee described three main forms of gas poisoning. (1) *Chlorine.* This was the original drift gas used by the Germans and was dangerous only where troops were quite unprotected, as in the first attack. It acted as a direct irritant of the pulmonary system, causing intense œdema of the mucosa, and, by the coughing and spluttering set up, a disruptive emphysema, with, in addition, a devitalising effect on the lung tissue. Many of those attacked died in two days, practically drowned by the œdema. Those who recovered suffered from acute bronchitis. (2) *Phosgene.* This was used first as a drift gas and later in shells. It was not irrespirable, and, indeed, might be inhaled in some quantity before its presence was recognised. It was extremely poisonous, causing death in one minute when inhaled in concentrated form. It did not greatly damage the bronchial mucous membrane, but produced an intense œdema of the lung. Two types of cases were observed: (*a*) Men who reacted and displayed a purple lividity; these recovered if well bled so as to relieve engorgement of the right heart. (*b*) Men who were pale and cyanosed; these died practically at once. Among remoter effects were emphysema and a hyaline thrombosis of the capillaries in many parts of the body—e.g., in the walls of the lung alveoli, in the renal glomeruli, and in the brain, where they caused so-called ring hæmorrhages. (3) *Dichlorethylsulphide, or mustard gas.* This was the best gas from the German point of view, as, though not so fatal, it caused more casualties than all the others put together. The actual substance was a greenish-brown fluid, with a boiling point of 217°C., so that when deposited anywhere it was not easily volatilised but remained poisonous for 5, 6, or 7 days. Its primary effects were on the bronchial tree—viz., intense inflammation with necrosis of the mucous membrane and the pouring out of a false membrane like that of diphtheria. This formed a pabulum for micro-organisms which, growing there, set up broncho-pneumonia and abscess of the lung. Among other effects were acute dermatitis and severe conjunctivitis characterised by swelling and œdema, temporary blindness, and in some cases opacities of the cornea which might last for months. A knowledge of these effects of poison gas was of importance to medical men, both in practice and in pensions work, as many of the results were permanent, such as bronchitis (often becoming chronic), asthmatic conditions, fibrosis of the lung (particularly after chlorine or phosgene), and thrombosis or ring hæmorrhages in the brain.

Dr. JAMES CARSLAW and Dr. JOHN M. COWAN made a communication on

The Fatality of Peptic Ulcer and the Importance of Early Diagnosis.

In a series of 112 cases treated in Glasgow Royal Infirmary during the years 1906–16, 14 patients died as the result of the ulceration—a mortality of 12·5 per cent. A similar mortality had been reported by several authors, though figures ranged from 2 per cent. (Leube) to 18 per cent. (Bulstrode). Such figures might not, however, represent the true mortality, as some patients died from causes other than ulcer, and some of the 14 cases referred to might have died after leaving hospital, either from ulcer or from causes indirectly associated with it. Post-mortem evidence showed that ulcer was much more common than was appreciated clinically, and that while clinically the majority of cases occurred in women, post mortem the majority occurred in men. In a contrasted series of 30 cases (soldiers) treated in the 3rd Scottish General Hospital from 1914 to 1919, one patient died during his residence, having been admitted with recurrence of hæmorrhage and too ill for operation. Of four patients submitted to operation three appeared likely to benefit permanently by it, and one unlikely, as widespread adhesions prevented the performance of gastro-enterostomy. Nine patients improved under treatment but relapsed on ordinary diet and had to be invalided out of the service. No fewer than 15 of the patients without any serious gastric symptoms showed occult blood in the stools, some for even long periods. Most of these were relieved from their symptoms after a few days in hospital, and all were dismissed "well." These were nearly all young men and suffered from a type of ulceration not likely to be seen in civil hospitals or to receive serious consideration from private doctors. Such cases probably supplied a number of those tragic incidents of sudden severe hæmorrhage or perforation without warning which everyone at times met with, and warranted a plea for special care in the examination of patients suffering from "dyspepsia," and in particular for the examination of the stools for occult blood.

Mr. HENRY RUTHERFURD exhibited illustrations of Diseases and Injuries of the Neck of the Femur.

RÖNTGEN SOCIETY.—An exhibition of radiographic prints by members of the Röntgen Society will be held at the Royal Photographic Society's House, 35, Russell-square, London, W.C., from Jan. 6th to Feb. 7th. The exhibition will be open daily (admission free) from 11 A.M. to 5 P.M. and on the evenings of Jan. 6th and 13th till 9 P.M. On Jan. 6th at 7 P.M. at the Royal Photographic Society's House a lecture on the X Rays Approached from the Popular Standpoint will be given by Dr. George H. Rodman, F.R.P.S.

SOCIÉTÉ DE THÉRAPEUTIQUE, PARIS.—At a recent meeting of this society Dr. Edmond Lesné and Dr. Léon Binet read a paper on the Resistance to Poisons according to Age, in which they showed by the following experiments that the young animal can resist certain poisons better than an adult one: 1. A new-born cat could resist an injection of 0·62 mg. of cocaine hydrochloride per kilo of body-weight, whereas half of this dose killed an adult cat. 2. A mouse aged 9 days, and weighing 5 g., could resist an injection of 0·5 mg of cocaine hydrochloride, a dose which proved fatal to a mouse aged 14 days and weighing 10 g. 3. Kittens aged 25 and 32 days could resist injection of 0·06 g. and 0·07 g. of morphia per kilo of body-weight, whereas an adult cat was killed by an injection of 0·05 g. per kilo. The greater resistance of young animals to poison is attributed to the activity of their glands with an antitoxic function, the greater vitality of their tissues, and the integrity of their excretory organs.—In a paper on the Prophylactic Value of Gaseous Disinfectants and Fumigation in Infectious Diseases Dr. Orticoni pointed out that the value of gaseous disinfectants and fumigation was due not only to their bactericidal action, but also to their forming a sort of mask which protected the upper respiratory tract from the penetration of micro-organisms. In certain factories in the South of France, where the workmen were exposed to the fumes of eucalyptus or the products of eucalyptus, the number of attacks of influenza was very small, and no fatal case was observed.—In a paper on the Importance of the Correct Interpretation of Urinalysis in Diabetes, Dr. Guelpa showed that diabetes presented two distinct stages which were of great importance from the point of view of prognosis and treatment. The first was a defensive stage characterised by an excess of urea and uric acid in the urine, and the second, which indicated a breakdown of the system, was characterised by a progressive diminution in the constituents of the urine, especially of the urea and uric acid.—In a paper on the Increase in Female Sterility Since the War owing to the Spread of Graves's Disease Dr. Raoul Blondel stated that the recent increase in the frequency of Graves's disease[1] was one of the principal factors of sterility among French women, one of the effects of hyperthyroidism being atrophy of the uterine muscle. Local examination in such cases showed a small pyriform uterus. Owing to the antagonism between the thyroid and the thymus Dr. Blondel recommended the administration of raw thymus in the form of lamb's sweetbread in addition to local measures such as massage of the uterus and dilatation by tents.

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[1] THE LANCET, 1919, ii., 1102.

Reviews and Notices of Books.

GUNSHOT INJURIES TO THE BLOOD-VESSELS.

Founded on Experience gained in France during the Great War, 1914–1918. By Sir GEORGE MAKINS, G.C.M.G., C.B., President of the Royal College of Surgeons, Senior Consulting Surgeon, B.E.F. With 4 coloured plates and 60 illustrations. Bristol: John Wright and Sons, Ltd. 1919. Pp. 250. 21*s.* net.

THIS volume is a compilation in book form of several papers already written upon the subject, together with a special section furnishing the material from which the views expressed have been deduced. No attempt has been made to deal with the literature. Perhaps this was unnecessary, since the book itself will certainly rank as authoritative.

Wounds of large vascular trunks and the resulting associated lesions must have always special interest for those who deal with war wounds, and it is our knowledge as to immediate results and treatment of these injuries has increased considerably during the last five years. Prior to the war certain special features of gunshot wounds involving blood-vessels were well recognised, such as the tendency to spontaneous cessation of primary hæmorrhage, even with most extensive damage to the vessel; secondary hæmorrhage as a common sequel; and the frequent development of traumatic aneurysm. These characteristics and results have also been found during the present campaign, and though Sir George Makins has found reason slightly to alter the classification of the types of arterio-venous aneurysm, making six in all, they remain substantially the same. Treatment of such injuries, prior to the war, involved usually the ligature of the main artery affected above and below the lesion, with removal of the associated vein only when it prevented efficient treatment of the arterial injury. This line of treatment has been improved upon, and our information increased by a more accurate knowledge of the signs of injuries to arteries. This is particularly so as regards the examination of the heart and of the arteries locally. It has been found that the local systolic arterial bruit is frequently transmitted to the heart, and hence cardiac systolic murmurs of a pronounced character frequently accompany wounds of certain of the blood-vessels. An attempt is made to explain these murmurs which—and it is a point of special importance—may return with the resumption of active life. As regards the local murmurs, the author distinguishes various types, such as the soft "bellows" murmur, a loud "rushing" sound, or a musical whistle. In the presence of the arterio-venous communication either the systolic bruit or the venous roar may be the more prominent element. No characteristic difference in the murmurs has been observed between contused wounds produced by bullets and clean-cut openings produced by sharp shell fragments or bombs. With regard to the effect of these wounds on the general circulation, the ultimate course of arterio-venous injuries tends to support the view that extra strain is thrown upon the heart, so that resultant changes take place in the peripheral circulation.

As regards the actual mode of development of some of the consequences of arterial injuries, the author has demonstrated these by the use of some excellent coloured microphotographs showing sections of arteries in the various degrees of injury, ranging from contusion of the vessel to complete division. The evidence on this point seems to prove that injuries of the nature of contusions and non-perforating lacerations are not infrequently the cause of aneurysms or hæmatomata, which appear at a later stage. Little need be said of the primary treatment of these injuries, which has been substantially the same as in previous wars, and is still complicated by the presence of sepsis. The author insists on the great value of immediate direct transfusion of blood in severe cases of primary hæmorrhage. Secondary hæmorrhage is still a not uncommon sequel of lesions to blood-vessels, and Sir George Makins gives a very concise account of the most recent ruling on the treatment of this complication. War experience has proved that ligature at the bleeding-point is the correct treatment, and proximal ligature of the main trunk supplying the wound area is condemned. There is one exception to this rule: When bleeding is taking place from one of the vessels of the buttock close to the point at which this vessel emerges from the pelvis, ligature of the internal iliac artery or of its posterior division is considered the proper course. Plugging is recommended should ligature or forcipressure prove unsuccessful or impracticable. It may be said that all forms of treatment which have been tried are discussed in this volume, from ligature and removal to plastic operations upon the arteries and veins. When ligature with removal of the artery is adopted it is recommended that the vein be also occluded or, if necessary, partially removed during the operation. A special point is made as regards this coincident ligature of the main vein, the author stating that gangrene is more liable to follow should ligature of the vein be omitted. It is stated that should the artery only be ligatured the limb "bleeds to death" through the patent vein. With regard to Tuffier's tubes, the author states that in severe cases of injury to the popliteal artery gangrene is prevented by their use, and lays it down as a rule that the tubes should be removed at the end of four days. The volume closes with a detailed description of the various methods adopted in cases of injury to individual arteries.

The book is well finished and copiously illustrated by diagrams, X rays, and pictures, and is a worthy synopsis of war-won knowledge, which will be of practical service also in general and industrial practice.

POST-MORTEM MANUAL.

A Handbook of Morbid Anatomy and Post-mortem Technique. By CHARLES R. BOX, M.D., B.S., B.Sc., F.R.C.P., F.R.C.S. Second edition. London: J. and A. Churchill. 1919. Pp. 372. 8*s.* 6*d.*

THE second edition of this excellent manual has been thoroughly revised; short but adequate sections have been added on the investigation of cases of sudden death, and the procedure to be employed when bacteriological examinations are desired, and brief descriptions of the changes occurring in the commoner tropical diseases have been incorporated in the text. We are glad to see that, in spite of these additions, the size of the book has not been appreciably increased. A work of this character cannot enter into competition with the more elaborate text-books of morbid anatomy, and its distinctive features would have been lost by injudicious expansion. In its present form it is one of the best and most useful units in the pathologist's library, and we can strongly recommend it as a reliable guide in all matters of post-mortem technique.

A SURGICAL HANDBOOK.

For the Use of Students, Practitioners, House Surgeons, and Dressers. By FRANCIS M. CAIRD, M.B., F.R.C.S. Edin., and CHARLES W. CATHCART, M.B., F.R.C.S. Eng. and Edin. Eighteenth edition, with appendix. With 208 illustrations. London: Charles Griffin and Co. 1919. Pp. 364. 8*s.* 6*d.*

THIS familiar volume has been brought up to date by the elimination of many old illustrations and their replacement by new ones, and it has grown by 40 pages. To all those officers who have had occasion during the war to augment their military knowledge by resorting to the "Field Service Manual" this surgical handbook will bring back memories. Just as the Field Service Manual treats of anything from the building of an incinerator to the firing of an 18-pounder gun, so this handbook deals with matters as far apart as the direct transfusion of blood and the cooking of food for the sick-room. It is essentially a book of reference, and lays no claim to any higher function. It has filled that place for many a busy doctor in the past, and will assuredly continue to do so in the future. Its illustrations are very numerous and diagrammatic in their simplicity. The index, which is of vital importance in a volume of this type, is adequate. We recommend it as a useful book for those for whom it is intended.

LEÇONS DE PATHOLOGIE DIGESTIVE.

By M. LOEPER. 4me série. With 34 illustrations. Paris: Masson et Cie. 1919. Pp. 298. 11 francs.

THESE 20 essays on a variety of topics connected with gastro-intestinal medicine range irregularly over a wide field—hyperchlorhydria, flatulence in Graves's disease, sarcoma of stomach, duodenal ulcer, the rectal lesions of dysentery. The author thinks he can establish the existence of a suprarenal dyspepsia and constipation, arising from adrenal insufficiency, which are amenable to specific treatment. An interesting chapter describes the cardio-vascular defects of dysenterics, and the last three essays all deal with the rather neglected nervous apparatus in the walls of the stomach and bowels. Functional disease is recognised, and especial importance is attached to the local implication of ganglia and nerves in dysentery and cancer as the cause of pain; there are some striking illustrations of diseased sympathetic ganglia.

THE WELFARE OF THE SCHOOL CHILD.

By JOSEPH CATES, M.D., D.P.H. English Public Health Series, Vol. VI. Edited by Sir MALCOLM MORRIS, K.C.V.O. London: Cassell and Co. 1919. Pp. 154. 5s.

Dr. Cates writes in a clear and straightforward style which is well adapted for the wide public to whom this series is addressed. The first part of the book deals with the findings of medical inspection of school children, and is calculated to produce the requisite amount of horripilation in the reader. The final chapters deal with the school building and the school annexe. The latter, which is the offspring of recent solicitude for the welfare of the school child, includes the canteen, the gymnasium, the school baths, the play centre, and the treatment centre. The author writes from the point of view of the medical officer of health of a large industrial town, who is also the school medical officer. The importance of the environment of the school child in the production of ill-health is throughout insisted upon. Dr. Cates writes strongly upon the iniquities of the insanitary privy-midden and the pail-closet. It is to be doubted, however, if these relics of the Middle Ages have in fact that influence in producing malnutrition in children which he ascribes to them.

In contradistinction to the general run of similar books little space is devoted to infectious diseases in relation to schools and scholars. These diseases are treated only in a general way, but the paragraphs dealing with them reveal a breadth of view and a progressive spirit which it is not usual to find in the sanitarian's attitude to this question. Instead of the ostrich-like policy of wholesale exclusion from school, Dr. Cates advocates the attendance even of contacts from houses in which infectious disease exists; and he describes a system of regular supervision and visiting by school nurses which has proved more successful in practice than the older methods of school closure and exclusion.

Dr. Cates writes only of what he knows and therefore with authority. The book, however, has in consequence the defects of its qualities. Many of the public for whom it is intended will search it in vain for any description of, or even allusion to, the various forms of voluntary effort which have been enlisted throughout many progressive areas in schemes for promoting the welfare of the school child. The subject of physical exercises is not adequately dealt with and no guidance is given in regard to such immediate extensions of activity as, for instance, the development of nursery schools. In spite of these serious omissions the work is an admirable exposition of the conditions which exist and of the provision which has been made for the welfare of the school child in a typical manufacturing district; and no doubt if the author had not limited himself to the things of his own experience the book would have lost much of that directness and authenticity which are its most important characteristics.

A DICTIONARY OF TREATMENT.

By Sir WILLIAM WHITLA, M.A., M.D., LL.D., M.P., late Professor of Materia Medica and Therapeutics in Queen's University, Belfast. Sixth edition. London: Baillière, Tindall, and Cox. 1920. Pp. 1083. 25s.

THIS work was first published in 1891, and the fact that it has reached its sixth edition is sufficient proof that the efforts of the author in making the book a useful work of reference have met with the success they deserve. The dictionary includes medical and surgical therapeutics, and the present volume has been, as far as possible, brought up to date. The more common affections, which form the great majority of cases in ordinary practice, receive due attention, whilst the rarer maladies, such as sprue and anthrax, are likewise discussed at suitable length.

The amount of space devoted to the treatment of the various diseases is by no means curtailed; for instance, no less than ten pages are occupied with the discussion on the therapeutics of eczema. Functional affections of the heart occupy nearly four pages, whilst the information on valvular diseases of the heart takes up 14 pages, and sound and practical suggestions are made as to the drug treatment of these affections and the general mode of life to be adopted by the patients. The book is a reliable and complete work of reference within the limitations which the author has resolved to observe. It is a dictionary of treatment and not a system of the art and science of medicine.

ROENTGEN INTERPRETATION.

A Manual for Students and Practitioners. By GEORGE W. HOLMES, M.D., Roentgenologist to the Massachusetts General Hospital; and HOWARD E. RUGGLES, M.D., Roentgenologist to the University of California Hospital. With 181 figures. London: Henry Kimpton. 1919. Pp. 211. 15s.

THIS volume is a valuable contribution to radiology inasmuch as, unlike many works on the subject, it deals adequately with the most important aspect of radio-diagnosis. The aim of the authors is to provide a general guide to the accurate interpretation of the evidence afforded by X ray methods. They are careful to impress the fact that no book can impart the necessary skill, and that the illustrations given are but types of lesions, or momentary phases of constantly changing and extremely variable processes. Given access to the work of a busy X ray department this book will be of great value to the radiological student, but, of course, a medical training is a necessary prelude to this study. The authors rightly say that: "In attempting to study gross changes by means of shadows a knowledge of pathology is as essential to the roentgenologist as that of anatomy is to the surgeon."

The book is arranged as a series of chapters, each dealing with a special subject, and concludes with a bibliography which, while not complete, is sufficient for the purpose. Some chapters seem rather compressed, but if every section were treated at length the volume would cease to be the convenient, almost pocket companion it now is. Every radiological student should have this book constantly at hand as he is sure to find in it many a useful hint for the elucidation of obscure X ray findings.

JOURNALS.

Journal of Pathology and Bacteriology, Vol. XXIII., No. 1, pp. 1–128, December, 1919.—Experiments on the Action of Unsaturated Fatty Acids and Lipoids on Amylolytic and Hæmolytic Phenomena, by P. Stocks.—A Modified Wassermann Test, by C. Y. Wang. The author mixes loopfuls of unheated serum antigen and sensitised ox corpuscles on a slide and observes the result microscopically: enough blood can be obtained from a fine capillary tubeful. He meets the many objections which will naturally be raised by showing that in a long series of cases tested in parallel with the original Wassermann method his process affords a rather more delicate test. Heating the suspected serum is

harmful to the specific reacting substance as well as to complement.—The Biochemical Comparison of *Bacillus sporogenes* and the Reading Bacillus by Quantitative Methods, by J. E. G. Harris.—The Paths of Spread of Bacterial Exotoxins, with Special Reference to Tetanus Toxin, by F. H. Teale and D. Embleton. Tetanus toxin passes from the site of injection to the central nervous system more by way of the perineural lymphatics than along the axis-cylinders; although it is quickly passed from systemic capillaries to connective-tissue spaces it will not pass into the central nervous system from the cerebral capillaries, nor into the cerebro-spinal fluid through the choroid plexus. Tetanus antitoxin cannot enter the central nervous system by way of the blood-vessels, axis-cylinders, or perineural lymphatics, nor from the cerebro-spinal fluid.—Macroscopic Appearances of War-injured Nerves, by S. M. Cone.—The Protozoal Parasites of the Rat, with Special Reference to *Spirochæta icterohæmorrhagiæ*, by A. G. R. Foulerton. A full account of the occurrence of the parasite of spirochætal jaundice (4 times in 101) and *Trypanosoma lewisi* (45 in 123) in London rats, with a useful summary of the present state of knowledge.—A Squamous Epithelioma of the Frontal and Maxillary Sinuses in a Mare, by J. F. D. Tutt.—Hydrogen-Ion Concentration and Antiseptic Potency, with Special Reference to Acridine Compounds, by C. H. Browning, R. Gulbransen, and E. L. Kennaway. Acridine compounds are specially effective in serum, because they do not combine with proteids, and work best at the reaction of body fluids.—Ectopia Cloacæ, by C. Walker.—Obituary of S. G. Scott, the histologist, with a portrait familiar to those who knew him in his laboratory at Oxford.—Spontaneous Nephritis in Rabbits, by J. P. McGowan.—Ganglioneuroma of the Adrenal and Neuroblastoma of the Sympathetic, by M. J. Stewart.—Subacute Liver Atrophy in a Case of Syphilis Treated with Galyl, by M. J. Stewart, C. W. Vining, and J. P. Bibby.—A Starch-splitting Streptothrix found in the Stools in Diabetes, by W. Ford Robertson.—Method of Staining Organisms in Tissues, by G. H. Wilson.—Antiseptic Properties of Acridine and Phenazine Compounds, by C. H. Browning, J. B. Cohen, and R. Gulbransen.—The Small Production of Agglutinins by Mice, by A. E. Boycott.—Effect of X Rays on Susceptibility to Bacterial Infection, by C. H. Browning, R. Gulbransen, and S. Russ. No effect with pneumococci and tubercle bacilli.

BOOKS OF REFERENCE.

Burdett's Hospitals and Charities, 1919: The Year Book of Philanthropy and Hospital Annual (London: The Scientific Press, Ltd. Pp. 1087. 12*s.* 6*d.* net), which contains a review of everything that concerns hospital administration, medical schools, asylums, convalescent institutions, and nursing establishments, is now so well known and established as a reliable book of reference that it scarcely requires from us any detailed description or commendation. At a time when hospitals are so sorely tried to make ends meet that there is grave danger of State intervention and the abolition of the voluntary system which has been the boast and pride of this country for the past 200 years, Burdett is particularly valuable as showing not only the needs of our healing institutions, but also the enormous volume of succour to the sick poor which they give. This valuable book also contains much useful information in regard to American and colonial hospitals and allied institutions, and we know of no other work of similar scope which is so convenient for reference.—*The Annual Charities Register and Digest* (London: Longmans, Green, and Co. Pp. 584. 5*s.* net), which is now in its twenty-eighth edition, is another well-known work of reference, and is an indispensable handbook to everyone who is interested in the charities in, or available for, the metropolis. Besides containing a review of the year of the financial position of metropolitan charities, detailed information is given of the individual institutions grouped under headings such as blind, deaf and dumb, epileptics, incurables, and so forth; while, under the heading of miscellaneous, societies dealing with social and physical improvement, employment, emigration, and protection of life, and of the helpless are dealt with. Reference is facilitated by a very full index.

New Inventions.

AN ELECTRICALLY DRIVEN BATH CHAIR.

OUR Motor Correspondent writes: An invalid's carriage, comfortable and luxuriously C-spring suspended, which is sure to be appreciated by invalids owing to the fact that it is driven by the occupant and thereby does away with the necessity of an attendant, has been produced by Messrs. J. and A. Carter, of Great Portland-street, London. Twenty-four 4 volt accumulators, each of 36 ampères capacity, placed under the seat, drive a ¼ h.p. electric motor housed under a bonnet over the front axle. The transmission from the motor to the front axle is by helical gearing, well boxed in, with a conveniently placed plug for oiling. The control is by a lever on the driver's right. When this is pulled back it applies a band brake to the right rear wheel. Pushing the lever forward and depressing a button releases the brake and switches on the power, which is full on with the handle fully advanced. By this means any speed from a mere crawl up to five miles an hour can be obtained. Sufficient power, which is ample to

ascend any incline, is carried for a run of about 20 miles. An accessible switch permits reversing at any speed. There is an additional brake, controlled by a lever on the left hand and acting on the left rear wheel. The front wheels have 12 × 1½ Dunlop pneumatic tyres, the rear 26 × 2 Dunlop pneumatic grooved motor-cycle tyres. The steering is of the ordinary bath-chair type, and seems particularly easy. On the floor facing the driver is a voltmeter and a plug for charging the batteries; a mileage recorder is also attached. The weight empty is 2¾ cwt. The machine is simplicity itself, and any patient with the use of his arms can manipulate it, and take a run at any speed up to five miles an hour.

The simplicity and ease of control greatly appealed to the writer, as, after a moment's explanation, he was able to manipulate the chair in and out among crowds of furniture in the showrooms, advancing and reversing at will. For ascertaining that there is sufficient power in the accumulators for a trip, it would be as well if an amptmeter as well as a voltmeter was fitted. A voltmeter may register almost the full voltage until the accumulators are nearly run out. Legally, the chair must be registered as a motor-car, carry number plates, and pay an annual motor-carriage licence. The driver, too, must have a driver's licence. It seems rather an anomaly that an invalid carriage, with a speed-limit of five miles an hour, should be thus penalised. The matter is, I understand, being represented to a traffic committee, now sitting, with a view to obtaining exemption of self-propelled bath chairs from regulations which it seems absurd to apply to such vehicles.

THE LANCET.

LONDON: SATURDAY, JANUARY 3, 1920.

The Coöperation of the Future.

THE opening of a New Year is a convenient date in which to register the experiences of the past and to determine upon the activities of the future, but such revisions and provisions will not have their full value, and may, indeed, betray us into error, if there is any tendency to regard the separate years as isolated periods rather than as arbitrary divisions of continuous time. No one really thinks that the embarrassments of 1919 have disappeared with the dawn of 1920, or that we can start with a slate free from the errors whose sequence remains, because we have determined that no such errors shall occur again. What we can decide at any moment is that the legacy charges of the past shall be paid in full with as much promptitude as possible, so that the assets which remain shall fructify in due season, and so that our future enterprises shall have free play and good chances of successful issue. And New Year's Day is a good time to register and act upon that decision, because it is a date upon which other people are likely to take the same course. The very general manner in which civilised persons regard the beginning of the year as an opportunity for stock-taking leads to coöperative effort making for human progress. The moral for the medical profession is exposed.

The anxious phase through which the calling of medicine is now passing makes it particularly necessary that those who follow it should face the problems of their professional life in a coöperative spirit, recognising that certain of the changes that will surely be brought about in our careers are quite commendable, and that others, if repugnant on the surface, may none the less be socially right in their working; and recognising, also, that some of the innovations may be found not to have the fortunate tendency attributed to them by their sponsors, when common steps to remedy the ill should be arranged. We have to regard the legislation for National Insurance against sickness, and its results, as a phase in a consecutive story—the story of the development of medical practice; and we have to think clearly, as a body of men who have been trained so to think, which of the unfortunate conditions of medical practice are being removed by new legislation and which are being confirmed into our daily work. We must consider how to mitigate these latter, how to assist the promises of scientific progress to develop under impending regulations, and how to ensure that faults in these regulations will be removed. Panel practice is an expression of the desire of the people to enjoy the ministrations of medicine in a full measure; unless our rulers had known that popular support was behind the national insurance legislation no such enactments would have ensued. But all medical practice has this same origin—it all springs from the natural wish of man to be free from disease—so that no separation between panel practice and other medical practice is possible in the logical mind. There is one common policy before the medical profession now as ever, and that is to ensure that the conditions of medical practice should be such that the nation may obtain from our efforts its full scientific value. This can only happen if the whole of our body is united not only in the altruistic desire to do good, and not only in the reasonable determination to obtain adequate remuneration for services rendered to the public, but also in the furtherance of detailed plans of coöperative practice whereby the care of the sick becomes a homogeneous whole.

It is fine testimony to the influential evolution of medicine that day by day a medical side to common affairs makes its appearance and draws from intelligent people acknowledgment of the spread of our science. This diffused dependence upon medicine is as good for our calling as it is for the world at large, for medicine is essentially one of the branches of human learning that requires the coöperation of humanity if it is to exercise its beneficent force. To-day medicine bids fair to take the place which classical learning occupied in the sixteenth century among the humanists who distributed the stores of classical literature placed at the disposal of the world by the revival of learning, seeing in them the food and instruction necessary for a long journey forward in civilisation. We medical men have to regard ourselves as the almoners of vast scientific blessings. It is our duty to join our forces so that for all classes of the population the best help we can provide is available; and whereas we know our weakness and our strength more intimately than any Government department can know them, it is essential that the methods under which those forces are marshalled should be those which experience of practice tells us will lead to the best service.

First Principles in Thoracic Surgery.

UP to the end of the year 1916 the expectant method of treating wounds which opened the pleural cavity was in vogue, and this resulted, speaking generally, in a number of deaths, a proportion of recoveries after prolonged convalescence, and a considerable residue of cases which made a good recovery and were returned to duty. The serious attempt to apply the general principles of surgery to gunshot wounds of the chest soon showed that it was both practicable and safe to operate in the early stages by opening the thorax widely, removing the larger fragments of metal

along with carried-in bone and clothing, and repairing the injured lung, the chest being then closed again. Most innovations are exploited beyond their merits, and there were at first some who claimed that every chest wound should be submitted to operation. The less severe injuries, however—typically those caused by the passage through the chest of a rifle bullet with small entry and exit wounds, without much splintering of ribs and without large hæmothorax—healed with little trouble, while a survey of after-histories showed a large proportion of quick return to duty. On the other hand, it was manifestly necessary to save life by operating on all patients with open sucking wounds of the chest, with extensive ragged wounds of the parietes, or with retention of large foreign bodies which had presumably carried in infected clothing. Between these two extremes lay a large number of cases in which the surgeons might well be in doubt whether to operate or not. Only an elaborate analysis of after-histories could answer this important question, and this was impossible while fighting was going on. It is only now that the appearance of a collection of statistical reports[1] by the Medical Research Committee affords material for at least a tentative answer.

In this valuable brochure of 40 pages are included some notes on penetrating wounds of the chest, by Major W. L. MANN, from No. 3 Canadian C.C.S.; statistics dealing with the operative treatment of chest wounds during the autumn of 1917, by Colonel A. B. SOLTAU and Colonel T. R. ELLIOTT, collected from about 40 C.C.S.'s in the Ypres and Lens salients; and statistics from base hospitals during autumn of 1918, showing after-histories of cases of penetrating gun-shot wounds of the chest transferred from C.C.S.'s, by Colonel W. PASTEUR and Colonel ELLIOTT. Along with these reports should be read an earlier analysis, in the same series, of 600 cases of gunshot wound of the chest, by Dr. J. M. FORTESCUE BRICKDALE, as well as the paper by Dr. J. B. MCDOUGALL, which appeared in our issue of Nov. 29th. The careful reader will then have before him materials for estimating the value of surgical interference in those cases of injury of the chest on which surgical opinion has not yet spoken. Major MANN was recognised as a surgeon of sound judgment who possessed great technical skill. He saw and treated himself at Remy Siding, near Poperinghe, between June, 1916, and November, 1917, the 600 cases which he has followed up. He advises operation in all cases of open thorax, in all cases of infected hæmothorax, and in those instances where the parietal wounds are large and ragged. Operation is not advised when the hæmothorax is unaccompanied by symptoms of infection, distress, or extensive damage to the parietes. His report, in fact, comes down to a recommendation for confining surgical interference to life-saving operations and for treating the rest by expectant methods. The analyses of SOLTAU, PASTEUR, and ELLIOTT alike aim at showing the average results of thoracic surgery as practised by operating surgeons at clearing stations, and the final conclusion runs:—

"The general incidence of empyemata was not markedly reduced by early operations, and the great value of the new surgical procedure was seen to lie chiefly in its power to save from death men with wounds of such severity that, apart from early operation, they would unquestionably have died outright or succumbed later to an overwhelming infection of the pleura."

The opening-up of the chest has on this showing saved life only in desperate cases, and it has not lessened sepsis in any material degree.

Some courage is required to question the deductions drawn from such figures with every care by able men, but it is nevertheless fair to ask whether figures obtained under very trying conditions convey the correct impression—whether, in fact, they can safely be regarded as standardising the procedure in gunshot wounds of the chest. There is another point. The new thoracic work was only begun at the end of 1916, and was still in its infancy in 1917, when surgeons were groping for the right way to operate and the right cases to choose for operation. In 1918 the fixed front became mobile, and all the conditions of operation were profoundly altered. These are precisely the circumstances under which the personal impression of a particular surgeon may be as just as the highest common factor of a very variable group of workers. And undoubtedly the impression that has remained with many a surgeon personally engaged in looking after chest wounds, is that lives were saved and sepsis was prevented by effective operation upon the right cases at an early stage. This is as much as to say that the principles of surgery, established for wounds of other parts, are applicable to wounds of the chest—a sound principle, and one which will hardly lead the surgeon into error or his patient into danger.

[1] Statistical Reports, No. 5, on Penetrating Wounds of the Chest. H.M. Stationery Office. Price 1s. 6d.

The Medical Report as Popular Educator.

THE preface to the annual report for 1918 of Dr. MEREDITH YOUNG, medical officer of health to the county of Chester, contains a confession of faith as to the function of the medical officer's annual report which is of considerable interest. It is this:—

....."Few if any business concerns can be carried on without an annual stock-taking. The medical officer's annual report is his annual report on the stock-taking in life and death, health and disease. From figures which one understands oneself, and which one endeavours to make comprehensible and of interest to others, the medical officer of health can see the leakages of life and health and draw conclusions as to their causation and the effect of measures intended to prevent them, so that more effective propaganda may be devised and worthless methods discarded."

Dr. YOUNG has given a useful reminder of the part which such periodical reports can be made to play in the information and education of the

general public, and his remarks might well be adopted as a motto by medical officers of health in preparing their annual reports. The actual duty of the medical officer of health is not to advise the public in his report, but he will be serving his authority usefully if he does so, or supplies his authority with the proper grounds for the sanitary instruction of the public.

While full recognition must be given to the admirable qualities of many reports issued from time to time by busy medical officers of health, it cannot be denied that there is also a number of somewhat indifferent and uninspiring reports which fall short of any standard that would have educational influence. What causes underlie the comparative ineffectiveness of this latter group? First, there are defects in exposition. Of late it has been realised, to a constantly increasing extent, that to reach the average man the principles of preventive medicine must be popularised; thus national healthiness may be reached by educating the layman in the avoidance of the beginnings of disease. The authority of the medical officer of health is directly a lay one, though he is also an officer of the State, and the instruction of laymen by medical men implies the depolarisation—to use WENDELL HOLMES'S analogy—of medical technicalities and their translation into the vulgar tongue. This is a difficult art to which it is not the lot of all medical men to attain. Sir GEORGE NEWMAN'S recent report to the Minister of Health, giving an outline of the practice of preventive medicine, may be quoted in happy illustration of the art at its best, and excellent examples could be adduced among the annual reports of medical officers of health. But many medical men find it very hard to give an exact message in the vulgar tongue, and the experience of medical witnesses in a court of law proves that sometimes this is quite impossible.

Lack of teaching instinct is not the only cause of failure, which in some cases seems to depend on misconception of the purpose of the annual report. Such reports are not merely a record of the past: they should also be a sign-post to the future. Among other reasons for an uninspired annual statement are: Lack of willingness to arouse opposition by a ventilation of defects when the medical officer concerned has no security of tenure of his post, and is perhaps only a part-time officer; excess of caution as to giving hostages to fortune by a statement of views; the dead-weight of a parsimonious council which will in some cases not even sanction the cost of printing the report. But the heart of the difficulty is in most cases lack of time. The statistical material must in any large area be prepared by clerks; is the commentary by the medical officer of health to be a mere connecting thread, or is it to be a reasoned deduction from facts? The former course results in a form of report stereotyped from year to year and tending to degenerate into a dreary sequence of tables. Such statistical statements obviously are essential to any business-like presentation of the facts, but it is not every medical officer of health who realises the vital importance of conveying the lesson of his figures to the reader without compelling the latter to seek out the meaning for himself. Were it an instruction to medical officers of health that all tabular matter should be replaced by a written statement of its purport, the loss might be counterbalanced by an increased appreciation of the underlying meaning, but this would be an undesirable and impossible proceeding. The many medical officers who now present in the body of their reports a popular statement of public health progress, relegating the statistical matter to appendices, have probably hit upon the best course. The difficulties in the production of the perfect report are varied and obvious; we register appreciation of those many reports in which these difficulties have been triumphantly mastered, rather than grumble at those which do not come up to the ideal. But every dull and incomprehensible annual report from a medical officer of health represents a missed opportunity of educating his authority and his community.

William Osler.

WILLIAM OSLER was the greatest personality in the medical world at the time of his death. By his scientific attainments he had earned a place in the first rank; and that place he adorned by a keen cosmopolitan knowledge of men and things, and by large literary activities which ranged through clinical medicine and every side of scientific education, and included philosophical and biographical essays and humorous disquisitions. Wherever his pen travelled the subject was illuminated by clear thought, accurate knowledge of literary predecessors, classical accomplishment, playful wit, and the most deep and honest charity. He was a great physician, a great professor, and a great author. Apart from the tragic stroke dealt him by the war, when he lost his only son, his life was the happiest one conceivable, for he reached his position on no grounds whatever save the merits of accomplishment and the force and charm of goodness. His swift successes brought no envy in their track, and his abounding popularity was the outcome of an unfailing and instinctive desire to help all who came to him in the most practical way, without either flattering his beneficiary or laying him under a burdensome sense of obligation. He was an embodiment of the fact that the science of medicine should know no racial tie, but should place itself at the disposal of the world. As first President of the Fellowship of Medicine he was in his element in strengthening the bond between Anglo-Saxon doctors; and when the doctors of Vienna sought our help it was to OSLER that they went first, knowing that he would regard them as members of one great calling. He had the genius of friendship, private and public.

Annotations.

"Ne quid nimis."

A MEDICAL PEER

To Sir Bertrand Dawson there accrues the high distinction of being the first medical man to whom a peerage has been given in acknowledgment purely of professional position. Lister was no longer a practising surgeon when he was summoned to the House of Lords in recognition of the world-wide achievements with which his name is associated; Sir Bertrand Dawson has been awarded a peerage on professional grounds, and in response to the growing feeling that in our Second Chamber there should be representation of all the great sections of the community. As physician to the London Hospital and as dean of the Medical Faculty of the University of London he enters the House of Lords with the highest professional status; he is admittedly in the front rank of our clinicians, he is an expert on medical education, and his public utterances dealing with professional organisation reveal him as one with sound ideals and clear views. He is, moreover, Physician in Ordinary to the King and chairman of the Medical Consultative Council, which forms the link between the medical profession and the Ministry of Health. During the war he served as consulting physician to the Forces. A recognition of the calling of medicine is implied in the great honour which has been done Sir Bertrand Dawson, and upon which we congratulate him heartily.

GERMAN MEDICAL ACHIEVEMENT DURING THE WAR.

IN his introduction[1] to the official German Medical History of the War, which he is editing, Otto von Schjerning gives an enlightening sketch of the work of the Feldsanitätswesen, of which he was chief during the last five years. He begins by remarking on the unwillingness of his countrymen to draw the painful lessons of Germany's fall, and reminding them that the need to climb out of their high buskins has enabled them to gain a correct standpoint for German medicine. The bitter want and deprivation have led to a proper recognition of scientific discovery and to new and unsuspected lines of progress. War has been once more, in the words of Heraclitus, "the father of all things," and it is in chemistry and medicine that pre-eminent progress has been achieved. The actual losses of medical personnel on the German side were comparable to our own. 1325 medical men on active service, or 5·4 per cent. of the total number, are known to have been killed or to have died as a result of their work, 2149 others were wounded non-fatally, and 467 were "missing." Schjerning goes on to give from year to year the special achievements of medicine in the field, the first and most essential being the 238 hospital trains which plied continuously from front line to base hospital and back again. At first tetanus played great havoc in Northern France, typhoid and dysentery in Champagne and the neighbourhood of Metz; each of these scourges soon yielding to appropriate vaccine or serum treatment. On his recommendation Behring and Röntgen early in the war received the Iron Cross in recognition of discoveries which brought untold saving of life and limb. During the long-drawn-out struggle around Verdun gas œdema became urgent, but it was only in the very last months of the war that an effective serum was obtained to stave off its awful consequences. The interesting fact is noted that no dysentery or typhoid convalescents were ever allowed to return home to spread infection; they were all collected in a great convalescent camp at Spa in Belgium until able to return to the line. Five-days fever, scurvy, hunger œdema, malaria, dengue, spirochætal jaundice are severally noted in the account, leading up to the enormous epidemic of Spanish influenza in 1918. Brussels, Warsaw, and Bucharest are given as the chief centres of venereal infection, but Schjerning records as a great sanitary achievement that these diseases were kept in check throughout the whole campaign, and were, in fact, far less prevalent among the troops than at home. In the last months of war various skin diseases became increasingly prevalent, especially sycosis, and parasitic worms abounded.

Speaking of the work of his own staff, Schjerning praises the great skill shown by those charged with setting up and equipping temporary hospitals. More than 24,000 doctors were, on the average, in the service of the army, 3000 were attached to the Red Cross, and associated with them were 600 dentists and 1800 pharmacists. As the available number of fully qualified men was reduced, medical students were summoned to take their places. Schjerning speaks with enthusiasm of the enhanced knowledge and ability gained on military service, with its enlargement of the field of vision and development of character and courage. A great feature of the medical side of the campaign were the conferences on scientific subjects held in the several army areas. Meetings of specialists from all the fronts discussed such matters as combating typhoid, dysentery, cholera, and tetanus. The surgical congresses at Brussels in 1915 and 1918, and Berlin in 1916, and the medical congress at Warsaw in 1916, added much to the store of medical knowledge. These efforts were rewarded inasmuch as the results of medical care improved from year to year, for in the first year of war 88·7 per cent. of wounded and disabled men returned to the front, in the three following years 91·3, 91·8, and 92·8 respectively. Apart from wounds, tonsillitis and gastric and intestinal disturbances played a leading rôle. Tuberculosis showed in the German army not the slightest indication of increase. Under particular medical advances Schjerning notes the abortive treatment of gonorrhœa with silver preparations, the development of the so-called provocative method in latent malaria, and the employment of cystin preparations in dealing with typhoid carriers. In typhoid disease the introduction of a solid and substantial diet from the second week of illness was attended with marked acceleration in convalescence. Alcoholic mental disease diminished greatly during the war. The surgical lessons of the war have been perpetuated for future generations of medical students in the war museums at the Kaiser Wilhelm's Academies in Berlin, Munich, and Vienna, some 7000 preparations having been made. The opportunity afforded by the battle-field to get a new insight into constitutional pathology was not lost sight of, and the normal structure

[1] Die Tätigkeit und die Erfolge der deutschen Feldärzte im Weltkriege, zugleich Einleitung zu dem "Handbuch der ärztlichen Erfahrungen im Weltkriege." Leipzig: J. A. Barth, 1920. Price M. 1.80.

and function of organs was studied on the still warm body. In this way the exact form of the systolic and diastolic heart, of the contracted and relaxed stomach, of the rugæ of the gastric membrane, of peristalsis in the bowel, and of the relations of rectum to prostate and vesicles was determined. A statistical appendix attached to the paper resumes the volume of the work carried out. It is here recorded that more than 10 million doses of tetanus serum and more than 12½ million doses of small-pox vaccine were given, while anti-typhoid vaccine ran up to a total amount of 103,000 litres and that of cholera serum to 80,000.

It cannot fail to strike the careful reader of Otto von Schjerning's introductory chapter that the record of medical achievement and of medical sacrifice on the other side of No Man's Land was not widely different from the record with which Sir John Goodwin has familiarised us.

THE TREATMENT OF WAR NEUROSIS.

THE advance which has been made, as a result of experience gained during the war, in the method of treatment for cases of neurasthenia, shell shock, and functional nervous disorders in general has been considerable, for no other form of medical disability has received greater or more intelligent attention. The medical men who have been brought directly into contact with cases of this nature, and whose duty it has been during the war to undertake the care of this class of patient, have learned to appreciate the dangers which attend delay in treatment, while experience has shown that special methods will very generally ensure satisfactory results. The Ministry of Pensions has established neurological hospitals for in-patients and psycho-therapy clinics for out-patients where these tried forms of treatment can be applied, but the Ministry feels that full use is not being made of these institutions. Many general practitioners, it is suggested, have cases of war neurosis among their patients which are not benefiting to the full by modern developments in therapeutics. Consequently the Medical Service Department of the Ministry is inviting general practitioners who have cases of war neurosis under their charge to communicate with the Service at 14, Great Smith-street, Westminster, S.W. 1, with regard to any case, even if the condition is not severe, which is not progressing rapidly towards recovery. In a severe case this should always be done, and, where necessary, the Ministry will certainly arrange for treatment at one of its special institutions.

THE RIGHT LEVEL FOR AMPUTATION IN ARTERIO-SCLEROTIC GANGRENE.

Dr. D. N. Eisendrath and Dr. R. B. Bettman have pointed out [1] the error of the majority of surgeons in being guided as to level to amputate by the area of arterio-sclerotic gangrene. Not infrequently the amputation is followed by extensive sloughing of the flaps, and either death from sepsis follows or the opposite limb becomes affected by extension of the thrombosis from the femoral to the iliac artery, and then to the opposite iliac. Dr. Eisendrath and Dr. Bettman felt that the ideal method of choosing the level to amputate would be to expose the femoral artery at the middle of the thigh, and to follow it upwards or downwards until the level was reached at which thrombotic occlusion ceased and distinct pulsation could be observed. This method gave gratifying results in the following case. A man, aged 56 years, was admitted to the Michael Reese Hospital, Chicago, with marked evidence of arterio-sclerosis and gangrene involving the entire dorsum of the foot. Pulsation was absent as high as the upper femoral region. Amputation through the lower third of the thigh by the Gritti-Stokes method was decided on. On exposing the femoral vessels at the middle of the thigh for preliminary ligation they were greatly surprised to find the femoral artery completely occluded by thrombosis. Following the vessel upwards they could not find pulsation until close to Poupart's ligament. Here the artery was ligated just above the occlusion—that is, through the lowermost pulsating portion. Amputation was performed at this level, and the patient, who had been extremely septic, made an uneventful recovery. However, in spite of the high level of amputation, there was moderate gangrene of the skin flaps. Dissection of the arteries of the limb revealed many calcareous areas in the femoral and a firm clot occluding it up to a point close to the femoral canal. The clot was adherent in many places, and extended into the tibial arteries. The veins were normal. Dr. Eisendrath and Dr. Bettman consider that exposure of the femoral artery in order to determine the upper limit of the occlusion is the simplest and most accurate method of deciding on the level of amputation.

[1] Journal of the American Medical Association, Dec. 6th, 1919.

MIDWIFERY AND THE UNQUALIFIED MIDWIFE.

IT is common knowledge that the proportion of births attended by midwives tends steadily to rise. In a large number of areas considerably over one-half of the total births are thus attended. In Preston, for example, the medical officer of health, Dr. H. O. Pilkington, in his annual report for 1918, shows 75 per cent. of the births as having been attended by midwives, and only 9 per cent. by medical practitioners, while in St. Helens in the same year Dr. H. J. Cates's annual report shows actually that 99 per cent. of the births were attended by midwives. While this tendency indicates, on the one hand, that patients are likely to be exposed to certain risks which might be avoided by skilled medical attention, it must, on the other, be conceded that there are possible recompenses to the patient. For it is quite arguable that the sickness and mortality from puerperal sepsis may actually be diminished thereby, since the Mother Gamps are now rapidly being hustled out of practice by age, infirmity, and the vigilant hand of the supervising authority, and the newer type of midwife, while of a markedly better stamp and education, is at the same time sufficiently afraid of consequences to shrink from undue interference with Nature's deliberate methods of delivery. She will therefore tend to eliminate that fertile source of dangers and of discomforts—instrumental delivery by practitioners too hurried or too tender-hearted to let natural processes take their course. In many areas the midwife has a serious rival in the completely unqualified handy-woman who assists at confinements for which a doctor has nominally been engaged, but at which he does not attend; so that in fact, though not in law, the woman practises as a midwife without the necessary qualifications. There is pressing need

for a remedy of this iniquitous state of affairs. Yet the solution of the problem is confessedly baffling. These women are much in request among the poorest classes for their homely qualities, their stock of hoary wisdom—no less impressive when wrong than when right—their practical experience in their own persons in the production and the rearing of large but usually transitory families. Even when the patients favoured with their attentions come to grief, it is still almost impossible to find a case where the incidents are of such a nature that misbehaviour can be taken into a law court. In two recent instances of ophthalmia neonatorum in one district, the same handy-woman and the same doctor were involved, yet nothing beyond a display of inquisitiveness by the supervising authority towards each was possible, for the claim that the patient had asked the doctor to attend the confinement and the handy-woman to help in the housework, and the further statement that the doctor was prevented from attending and that the woman had therefore helped in the emergency, formed an all-sufficient reply. At present, supervising authorities under the Midwives Act have two main policies—one negative and the other positive. The negative policy is to lie in wait for the flagrant case—how long sought and how infrequently found—in which the evidence is sufficiently blatant for the doubtful issues of trial in a court of law to be faced. This course is both tedious and perilous to the prestige of the supervising authority if the latter fails to win its case; and in any event it does not deal with the root of the matter—the shortage of trained help at fees which the poor can pay. The positive policy is for the supervising authority in its alternative character of county or county borough council, or for other local authorities, by joint or separate action, to provide or to assist in the provision of trained midwives. This policy is being increasingly adopted by the multiplication of district nursing associations, and by the provision of municipal midwives. There can be no doubt that while it tends primarily to put out of action the less well qualified of the existing "bona-fide" midwives, it does also react on the unqualified handy-women who are the present-day replica of the uncontrolled midwife of 20 years ago. At the same time, legal machinery for dealing with the question more easily than is now possible would be a great boon. Practitioners must be brought to realise the unfairness of accepting midwifery cases unless they have a reasonable prospect of fulfilling their engagements. Any laxity in this matter must result in a strong temptation, to put it mildly, on the part of the cynic to look on the arrangement between patient, doctor, and handy-woman as a tacit understanding equivalent to the covering of unqualified practice.

THE VISUAL REQUIREMENTS OF MOTOR DRIVERS.

IN the early months of 1919 a committee was appointed by the Council of British Ophthalmologists to ascertain to what extent the increasing number of street accidents might be due to defective vision on the part of drivers of motor vehicles. The chief problem before the committee was to determine the types of visual defect likely to affect a driver's power of avoiding accidents, and to devise a standard which would not penalise drivers whose visual defect is such as not to interfere with their capacity for driving with safety. The report, which has now been presented, is divided into five parts: the first recapitulating the conditions under which drivers' licences are at present granted; the second giving the number of accidents occasioned in London annually by mechanically propelled vehicles; the third enumerating the various kinds of visual defect in motor drivers from which accidents may arise; the fourth suggesting a scheme of vision testing for licences; and the fifth summarising the recommendations made by the committee. The Council of British Ophthalmologists now recommends that before a licence is granted the applicant should be required to show his ability to steer a motor-car round corners and to avoid obstacles, and before a licence is renewed the applicant should be required to sign a statement that since it was granted he has not suffered from any physical disability likely to interfere with his driving capacity. Further, that a licensed driver with visual defect who meets with an accident attributable to that defect shall be liable to have his licence cancelled or endorsed. The most important recommendation is to the effect that special sight-test certificates of three grades be granted to applicants whose sight has been tested by ophthalmic surgeons appointed for the purpose: Grade A certifying the holder's visual capacity to drive any kind of motor vehicle; Grade B his capacity to drive any vehicle other than a motor omnibus or tramcar; and Grade C his capacity to drive a motor tramcar. The standards for these three certificates are laid down in the report, which will, we believe, be acceptable both to the police authorities and to the men concerned.

THE PRESENCE OF SO-CALLED VITAMINES IN URINE.

Professor Gaglio[1] recently communicated to the Academy of Medicine of Rome the results of some experiments made in conjunction with Dr. Roseo, which tended to show that the administration of 3–4 c.cm. of human urine, slightly concentrated in a water bath, produced identical curative effects with the vitamine extracted by Funk from rice husks in pigeons suffering from artificial beri-beri produced by feeding on polished rice. Even when the animal was reduced by such diet to a condition of extreme gravity, with contraction of the muscles of the neck and opisthotonos, it recovered completely under the influence of urine given two or three times daily. Continuing the administration of rice and urine the animal remained well for some days, but then the nervous symptoms reappeared in a mild degree, and the animal lived longer than controls deprived of this treatment, the attenuated form of the disease lasting for many weeks. If, when the urine had suppressed the nervous symptoms, the diet was modified by the addition of other nutritive substances, such as yolk of egg, the animal completely recovered. In order to put an interpretation on these experiments, it might be argued that the vitamines, which are formed in the organism or which are derived from food, are eliminated by the kidneys. But it is precisely as regards the conception of vitamines themselves that these experiments seem particularly interesting. Vitamines, as we now know, are diffused throughout all kinds of food, more especially vegetables. Funk, who extracted them from rice husks

[1] Il Policlinico, Nov. 23rd, 1919.

and yeast, found that the more he purified them the less active they became. It would hence seem that there are several substances which have a similar action and perhaps act synergically in the sense that some, in themselves of slight activity, are capable of reinforcing the action of others. On the other hand, many artificial derivatives of pyridine and pyrimidine, and some xanthin derivatives, have been prepared, which have the same remedial action as vitamines in pigeons affected with polyneuritis. If these substances exist almost universally in food, if they can be artificially prepared, and if one can replace another, their specificity cannot be admitted, even while admitting that they represent alimentary principles indispensable to life. As to the nature of these principles, when we consider the plasma which filters through the capillary walls and irrigates the tissue cells, it must be recognised that all substances necessary to life are to be found in it. Now in this plasma, besides proteids, fats, carbohydrates, and mineral salts, there are many nitrogenous organic substances which either come from food or are produced by the metabolic changes of the organism. Such substances have been for a long time known in chemistry as *nitrogenous extractives*, and in food analysis are calculated specially as *non-proteid nitrogen*. These substances have been neglected as regards their function, being considered merely as dregs to be eliminated. But even though they may be dregs in reality, as long as they circulate in the blood they must play an important part as stimulants of nutrition and of the functions of organs. The so-called vitamines considered in this light lose the idea of specificity which has converted them into mysterious substances.

THE ELSIE INGLIS MEMORIAL.

Two names will go down to history associated in the public mind with the ministry of healing during the war along with those of discoverers and of highly placed administrators; they are the names of two women, one a nurse and one a general practitioner. Nurse Edith Cavell's monument is now being erected in one of London's busiest thoroughfares, though it is not as nurse but as patriot that her fame was gained. Dr. Elsie Inglis's memorial is to take the form of furthering two schemes which she had very deeply at heart: the rebuilding of the Hospice for Mothers in Edinburgh for the study of maternal and child welfare by women medical students, and the foundation of a hospital in Serbia with a training school for nurses. The "History of the Scottish Women's Hospitals,"[1] which has just appeared, is dedicated by its compiler, Mrs. Shaw Maclaren, to Dr. Inglis's memory, and is intended to promote the objects of the Elsie Inglis Memorial. The record centres round a personal appreciation of the founder of the Scottish Women's Hospitals from the pen of Miss S. E. S. Mair, the other sections of the book dealing in succession with the work at Royaumont, in Serbia, Russia, and Roumania, among the Serbian refugees in Corsica, at Salonika, and the Calcutta Orthopædic Centre. The story is told almost entirely in the words of the women who did the work, and a very moving and entrancing story it is. Mrs. Maclaren says that it will be the lasting pride of the Scottish women that it was their privilege to contribute more than one of the heroic figures which have emerged from the wreckage left by the war. To us the really astonishing thing in the history of the expedition is not so much the genius of the pioneers, who have arisen when needed at all such critical periods in the world's history, as the average merit of the rank and file of the party, working under conditions without rule or precedent. The prospect before the medical woman is happy in the light of this experience. Note should be taken of the address in London of the National Memorial to Dr. Elsie Inglis—it is 110, Victoria-street, S.W.1.

[1] Edited by Eva Shaw Maclaren. Hodder and Stoughton. Pp. 408. Price 7*s.* 6*d.*

ANAEROBIC ORGANISMS.

THE report of the Anaerobe Committee, which we summarise on another page, clears up a number of dark places in the life of the micro-organisms which shun the air. It has always been something of a puzzle to conceive how strict anaerobes, such as *B. tetani*, which live in cultivated soils, can find conditions sufficiently anaerobic to suit their mode of life. Pasteur's original explanation was that the aerobes living in association with anaerobes are able to abstract oxygen quickly enough to create loci of anaerobiosis. Kedrowsky offered the explanation that the aerobes elaborate substances of a special kind which favour the growth of anaerobes, but this view is not in agreement with the facts. That such a special pabulum is unnecessary is shown by the growth of anaerobes in pure culture on media of the same composition as that required for aerobes. Pasteur's view was modified by von Oettingen, who likened the action of aerobes to that of a reducing substance in solution, but this is a small distinction which may be ignored. It may be said that substantially Pasteur's idea still holds the field. The probable chain of events in the life of a sporing anaerobe living under natural conditions is an alternation between the spore and bacillary form with the variation of the oxygen tension in the immediate neighbourhood of the organism.

Can an anaerobic bacterium multiply in a medium completely deprived of oxygen? A great deal of labour has been expended in attempts to answer this question, which is of both philosophical and practical importance. The energy required by cells for the maintenance of life and for the performance of their natural functions is normally obtained from oxidation processes. We know that most bacteria and some animal cells, such as nucleated red blood cells, are able to exist for a time in the absence of oxygen, but their manner of life is generally altered. Thus the mould, *Mucor racemosus*, which burns glucose to CO_2 and water in the presence of oxygen, is unable to carry the process of combustion beyond the stage of alcohol and CO_2 under anaerobic conditions; at the same time the mould undergoes morphological changes. The yeast cell shows the same alteration in its metabolic activity when it is placed in an oxygen-free sugary solution. The energy for growth and function is here obtained from a chemical process which yields something like a twentieth of the energy of that derived from the usual complete oxidation of glucose. It appears, therefore, that in aerobic organisms the cellular mechanisms, by which chemical energy is utilised, are adaptable to reactions other than those which normally occur. The metabolism of anaerobes is of a special kind, and it is of great importance to know whether

absolute anaerobiosis is optimal or whether a very low oxygen tension is necessary for maximum growth. The technical difficulties involved in the solution of the problem are very great; for example, the oxygen condensed in an excessively thin film on the surface of glass cannot be neglected. Noguchi, in his work on the cultivation of the *Treponema pallidum*, used a perfectly air-tight desiccator, which was evacuated under a pump, washed free of air by means of a stream of pure hydrogen, evacuated again, and the process repeated until the gas in the desiccator was unable to darken a clear solution of pyrogallol in caustic soda. By means of such methods sufficient evidence has been accumulated to show that the strict anaerobes can grow and divide under perfectly anaerobic conditions, but most observers have concluded that a certain minute amount of oxygen is necessary for optimum growth in which the oxygen takes part. The general rule may be laid down that there are no sharp lines dividing organisms into aerobes and anaerobes. Most bacteria are able to exist comfortably over a wide range of oxygen tensions. The aerobes are adapted for growth in an atmosphere containing oxygen in a percentage approaching that of air; the anaerobic bacteria vary in their repugnance to oxygen within limits ranging from 0 to about 20 mm. tension.

HOUSING AND PLANNING STANDARDS.

THE medical officer of health who wishes to know his own legal status and duties as a sanitary officer, and in addition those of the local authorities with whom he coöperates, will find the law on these matters clearly and adequately expounded in the new edition of Mr. W. A. Willis's volume on housing.[1] He will also need to possess the latest Memorandum issued by the Ministry of Health,[2] which deals, not only with laws and regulations, but also with the policy to be adopted in carrying them out. Financial assistance is available under the Government's scheme for the demolition of unhealthy areas, as well as for the construction of new houses. The general policy to be adopted towards unhealthy areas is "hasten slowly." Imperfect houses are to be made fit for habitation even if they cannot be made desirable. By the removal of a few houses, the lighting and ventilation of those that remain may be greatly benefited. The standards of fitness are briefly enumerated, those at the head of the list being held to be generally the more essential.

The house must be (1) free from serious dampness; (2) satisfactorily lighted and ventilated; (3) properly drained and provided with adequate sanitary conveniences, and with a sink and suitable arrangements for disposing of slop water; and (4) in good general repair; and should have (5) a satisfactory water-supply; (6) adequate washing accommodation; (7) adequate facilities for preparing and cooking food; and (8) a well-ventilated store for food.

The last sentence in the chapter on standards illustrates the caution with which the Ministry of Health moves towards demolishing that which it finds it so difficult to create: "Cleanliness and freedom from vermin should be secured; a house continuously and seriously infested with vermin may warrant a closing order."

[1] Housing and Town Planning. By W. A. Willis, LL.B. Lond., Barrister-at-Law. London: Butterworth and Co. and Shaw and Sons. Second edition. 1919. Pp. 282.

[2] Manual on Unfit Houses and Unhealthy Areas. Vol. I.: Policy and Practice. London: His Majesty's Stationery Office. 1919. Pp. 32. 1s.

The third section of the memorandum may be accurately described as a chapter on the standards of planning and architecture. It is laid down that there should be a small playground for the use particularly of young children within about half a mile and a recreation ground of moderate size within about a mile of every dwelling, experience having shown that the use by children of open spaces beyond these distances is generally slight. For tenement buildings, where owing to density of population this method of housing is permissible, it is laid down on the triple score of health, amenity, and cost, that the height should never exceed three storeys. It is the sad experience of cities with tall picturesque buildings that the young children who live in the upper storeys are kept indoors to an extent detrimental to their vigour and healthful growth. In a circular letter appended to the Memorandum Dr. Addison solicits the help of the county medical officers of health in obtaining a regional housing survey, and gives the welcome information that the medical staff at the Ministry is being strengthened to cope effectively with the many questions relating to housing.

THE RECENT PARLIAMENTARY SESSION.

ON Tuesday afternoon, Dec. 23rd, a Royal Commission gave assent to a number of legislative measures in which the medical profession is keenly interested. Among the Acts which then received the Royal Assent were the Mental Deficiency and Lunacy (Amendment) Act, the Nurses' Registration Act, the Nurses' Registration (Scotland) Act, and the Nurses' Registration (Ireland) Act. In the King's speech occurred the following paragraph:

I have also assented to Bills for the establishment of the Ministry of Health in England and a Board of Health in Scotland and a Council of Health in Ireland. I anticipate that, when they are in full working order, they will prove invaluable in coördinating and improving the service of the health of the people.

Parliament stands prorogued until Feb. 10th.

OCCUPATIONAL ULCERS.

Two new conditions have been made notifiable under the Factory and Workshop Act of 1901. One of these is the epitheliomatous ulceration due to tar, pitch, bitumen, mineral oil, paraffin, or any compound, product, or residue of any of these substances; and the other is chrome ulceration, due to chromic acid or bichromate of potassium, sodium, or ammonium, or any preparation of these substances. In industrial employment ulceration of the skin is not infrequently set up by the substances handled. Under appropriate treatment, at no matter what age, such ulceration usually heals quickly, and should it recur will again heal with rest and treatment. In the case of those handling tar and similar substances, however, especially when the workers are over 35 years of age and have worked for many years at a particular operation, the ulceration following on the skin irritation set up may not heal, but spread over a larger surface. This form of ulceration, which occurs with relative frequency on the scrotum, is then to be regarded as epitheliomatous, and is to be notified as such to the Chief Inspector of Factories at the Home Office. When chrome compounds and their solutions remain in contact with the broken skin, and sometimes even with a very sensitive skin in the

absence of an obvious broken surface, they give rise either to a general eczematous ulceration or a circumscribed ulcer known as a "chrome hole." Both these conditions, when definitely ulcerative, are now notifiable. Recurring attacks of either epitheliomatous or chrome ulceration should also be reported when a different part of the body is attacked.

THE PREVENTION OF INFLUENZA.

IN view of the possibility of a further outbreak of influenza this winter the Ministry of Health has issued a circular (No. 50) and a memorandum (No. 2/Med.) dealing with the measures which should be taken for preventing the spread of infection and for lessening mortality from the disease. Influenza spreads with such extreme rapidity that arrangements for dealing with outbreaks require to be planned out in considerable detail, and the part to be played by each officer determined and understood in advance. It is especially desirable to make provision for sufficient nurses to be immediately available when their services are required, and any sanitary authority may provide medical and nursing assistance for its poorer inhabitants, including the dispensing of doctors' prescriptions. The chief novelty is the gratuitous supply of anti-influenza vaccine as a formula containing a larger proportion of Pfeiffer's bacillus than formerly. It is represented as a vaccine against secondary complications, of which the degree of utility is not yet established, but which should be used now if it is used at all, not kept until a new wave is on us. Supplies of this prophylactic vaccine will be furnished to medical officers of health for distribution to all medical practitioners in their area who desire it, and its systematic employment would throw light upon a very dark corner of epidemic disease. Applications for vaccine in quantity should be addressed to the Government Lymph Establishment, Colindale Avenue, The Hyde, London, N.W. 9, stating the quantity required. The Ministry of Health lays great stress on the publication by each authority of full information respecting the facilities provided for assisting persons suffering from influenza and on the preparation of leaflets, posters, and other educational methods, setting out the precautions to be adopted to minimise the risk of infection and complications.

At the end of the memorandum a schedule is given of the ten points to be carefully considered by every sanitary authority.

1. The appointment by the authority of a small emergency committee, to whom, with the medical officer of health, should be delegated full powers to act and incur necessary expenditure.
2. Medical practitioners and any voluntary health workers in the district to be consulted through their respective local organisations and their coöperation invited in determining the practical methods to be adopted.
3. A scheme as regards the provision of nursing and other assistance to families stricken with influenza to be formulated, such scheme to be carried out under the direction of the medical officer of health.
4. Division of the town or district for this purpose into areas, to each of which one or more trained nurses are allotted for domiciliary nursing, the nurses to act in regard to individual patients solely under the direction of the medical practitioner in charge of the case.
5. Women to be enlisted as "home helps," to assist with cooking, care of children, and ordinary domestic work. Inquiries to be made to ascertain where such assistance is most urgently needed.
6. Utilisation to the best advantage of health visitors and other members of the staff of the authority and of institutions under the control of the Council; improvisation of temporary creches and of special kitchens in which food and invalid diet can be prepared.
7. Allocation to influenza patients of one or more wards in the isolation hospital or in some other available and suitable emergency hospital.
8. Issue of notices and leaflets to the public.
9. Prevention or mitigation of overcrowding, and securing adequate ventilation in public buildings or conveyances under the control of the Council.
10. School closure may be specially useful in rural and smaller urban districts.

These are measures which, in the opinion of the Ministry of Health, may in the aggregate reduce the opportunities of exposure to infection. By thus helping to space out the epidemic, something may be done to prevent serious dislocation of the ordinary life of the community—a dislocation which itself increases the danger by making proper care of the sick impossible. The most important services which can be rendered, however, consist in the organisation of the available nursing service and the provision of assistance to influenza-stricken households.

THE CHINA MEDICAL BOARD.

No larger field for medical education is to be found anywhere in the world than that of China, with its population of 300 or 400 millions. To train the necessary doctors for China might fitly be described as a Herculean labour. It is not wonderful that what is probably the largest single fortune ever amassed in history should be seeking its outlet in this field. We welcome the work for this object undertaken by the Rockefeller Foundation (61, Broadway, New York), which has just received a further donation of 50 million dollars from the "Oil King." The fourth annual report, from Jan. 1st to Dec. 31st, 1918, lies before us. Peking is the centre of their operations, and they have wisely joined forces with the only other unofficial body undertaking the task in any large way—namely, the doctors who have gone to China in connexion with the missionary societies of England and America. Some 5 million dollars are being put into land, buildings, and equipment in Peking, and a staff of over 70 persons are associated with the Union Medical School there. The larger number of these seem to have high qualifications and good experience. To read through the list gives the impression that the China Medical Board is taking its task seriously. In order to secure a constant stream of well-prepared students, the board has appreciated the necessity for helping a number of institutions where preliminary teaching is given, and no less than 19 hospitals and three other medical schools have been assisted by grants. Another most important service rendered is the granting of scholarships for post-graduate and research work to missionary doctors on furlough. In this way 35 medical missionaries and nurses have been helped and 11 Chinese doctors, besides others, such as students and pharmacists. It is well to see great wealth being spent with discretion and largeness of vision to help in alleviating human suffering. The means by which such wealth has been accumulated, and the value of the system that makes its accumulation possible, may be open to criticism, but there can be no doubt that, once accumulated, the method of disposal which the Rockefeller Foundation has conceived and is carrying out is of good augury for the future.

THE IRISH PUBLIC HEALTH COUNCIL.

A well-informed Irish correspondent writes:—There is a growing feeling among the public, as well as in the medical profession, that the Irish Public Health Council would be wiser if they put their cards on the table and showed clearly in what direction their deliberations were tending. Rumours differ as to the position of affairs in the Council, with the result that an atmosphere of suspicion is being created, inimical alike to clear thinking and practical action. In the last number of the *Journal of the Irish Medical Association* there is a note to the effect that the members of the Council propose to have a conference with the Irish Medical Committee so as to attempt to decide who, under the new scheme, will receive free medical attendance. This will raise several questions:—(1) What is to be the solution of the Poor-law medical question with such antagonistic elements as the unfortunate dispensary medical officers (who feel very dissatisfied with the support given them in the past by the central authority—the Irish Local Government Board) and their masters, the guardians, whose chief object is to keep down taxation? (2) How will the union and county infirmaries and the town and city hospitals be affected by such a plan? (3) What is to be the position of the insured, even in the truncated scheme in force in Ireland, so distasteful to the public, to the insured (in constant quarrel with the societies), and to the panel doctors? (4) What about the housing question—the bed-rock of public health—and the milk-supply? (5) Are new maternity homes to be erected over the country? A large body of the medical profession and public see that the schemes recently put in force by the authority of the Local Government Board to cope with tuberculosis, with infantile mortality, and with the spread of infectious epidemics have failed. The only result seems to be greater expenditure than ever of public money, with no concomitant lowering of the mortality and with no diminution in the prevalence of preventable disease. These people are asking, Is there to be in Ireland a State public health scheme, and, if so, is it to be of a part- or of a whole-time nature? Ireland never was so financially prosperous as at present, and as a result young men and women are crowding the medical schools, their parents believing that there will be soon an immense number of well-paid medical officials administering a State Medical Service. Young men recently qualified are also coming back to the universities and schools to prepare for a public health qualification. One thing is clear, no Irish Medical Committee will attempt to advise an Irish Public Health Council on such difficult questions as those I have set out until an expression of opinion from the whole medical profession has been obtained. If the Irish Public Health Council is to make any progress they must state openly what measure of public health they propose to suggest for Ireland, and they must remember that it is the medical profession who will have to carry it out, and with whom its success or failure rests.

INDEX TO "THE LANCET," VOL. II., 1919.

THE Index and Title-page to Vol. II., 1919, which was completed with the issue of Dec. 27th, will be published in THE LANCET shortly.

THE DYING-OUT OF NATIVE RACES.

BY W. H. R. RIVERS, M.D., F.R.S.

THE death of peoples is a subject peculiarly fitted for the consideration of an Institute of Public Health. Just as it is the business of medicine to discover why certain members of a community fail to last out the usual span of life or live on in an enfeebled state, so is it the business of public health to discover the causes which interfere with the vigour and vitality of peoples. It is well that such an institute as this should not merely attend to the factors—material, mental, and social—which influence the health of its own community, but should extend the field of its inquiries even to the study of widely different races. In the fate of those unfortunate peoples who have gone under in the struggle for existence, or are tending to this end, we have only an extreme case of a process which it is the aim and business of public health to avert. My object to-day is to inquire into the causes which are producing the extinction of a people for whose welfare this country has made itself responsible.

A lecture concerning disease and death usually takes one of two forms. It may attempt to give a complete account of some subject, the systematic lecture of the schools, or it may take the form known as clinical, in which a patient who illustrates some special feature or features of interest is brought before the audience and made the text by means of which the lecturer may bring forward matter for instruction. When I first undertook to give this lecture I thought of dealing with the subject in the more systematic way, and was preparing a survey of the world and of the causes which are leading to decrease of population here and its growth there. It occurred to me, however, that in the short time at our disposal I could do more justice to the subject if I chose the method of the clinical lecturer and brought before you a special patient, one, I am afraid, sick almost unto death, through whom I can illustrate some of the more salient facts to which I wish to direct your attention. I cannot, as they would at St. Bartholomew's or St. Thomas's, bring the patient before you so that you can see for yourselves the ravages of disease and hear with your own ears the complaints of the sufferer. I must be content with the attempt to bring before you in imagination the people of the islands of Melanesia, whom I have chosen as the patient of this clinical lecture.

Diversity in Physical Type and Language and Customs in Neighbouring Tribes.

If you will look at the map of the Pacific you will see to the east of Australia, extending south-eastwards from New Guinea, a long chain of islands beginning with New Britain and New Ireland, passing through the Solomons and New Hebrides, down to the Loyalty Islands and New Caledonia. The many islands of this prolonged archipelago are inhabited by a people who were almost certainly of original negrito or pygmy stock, among whom there have come at various times the immigrant bands, allied to ourselves, who, farther to the east, have peopled the islands of Polynesia. These immigrant peoples, differing widely in physical appearance from the original inhabitants, settled in varying numbers in different groups of islands, so that there has been produced a high degree of physical diversity of the people. Though all show the negroid characters of the indigenous inhabitants, they vary greatly in colour of the skin, form of the nose, and curliness of the hair, the features which especially distinguish the black from the white division of mankind. So great is the physical diversity thus produced that when time has accustomed the eye to discern the differences, they are seen to be quite as great as those which in our own continent distinguish the tall blonde Scandinavian from the short swarthy type of Spaniard or Italian.

Corresponding with this physical variety there is an even higher degree of linguistic and cultural diversity.

[1] A lecture delivered at the Royal Institute of Public Health on May 22nd, 1918.

Though most of the languages belong to one family, here and there, in Fila and Meli, in Bellona and Sikaiana, we find speakers of the widely different though related Polynesian tongue, while in a few cases, such as Savo and Vella Lavella in the Solomons, are found examples of a language belonging to a family which differs as widely from the rest as Magyar or Finnish differ from the Aryan languages of Europe. Comparison with Europe, however, wholly fails to do justice to the Melanesian diversity. Within an island no larger than the Isle of Wight may be found three languages differing from one another as greatly as any three languages of Europe, while dialectical differences are found within a space smaller than the average English parish.

Accompanying this linguistic diversity is an immense variety of custom and institution. Hardly any of the strange human customs which have excited the curiosity and wonder of travellers fail to show their presence among this people, while forms of social organisation and of marriage unknown elsewhere are found among them. Here again the diversity is very great. In one island typical totemism occurs; in another, not far removed, no trace of this form of social organisation exists. One set of islands is altogether dominated by an organisation with many similarities to the secret societies of Europe, while in another no trace of them nor any tradition of their presence in the past is found. In one district there exists a special form of warfare with the sole object of capturing human heads as offerings to the dead, while elsewhere are peaceful people who only resort to war, and then only of a largely ceremonial character, on the occasion of certain social offences, such as homicide or rape. The one feature which is common to all is the permeation of social custom by a firm faith in the reality of the life after death and in the influence of the dead upon the living, a belief revealing itself in countless rites of prayer and propitiation accompanying almost every act of their daily lives.

Effect of Communications with the Civilised World.

Among these lowly peoples, simple and yet full of interest, there came first the brief visits of the Spanish explorers of the sixteenth century, followed by those of the French and British navigators, including Captain Cook. Then followed the occasional visits of a whaler, and the more frequent and prolonged excursions of hunters for sandal-wood. These were followed by settlers, who brought to them the goods of other lands in exchange for their coconut, pearl-shell, and ivory-nuts. With the calico and other useful goods they brought not only the relatively harmless tobacco, but also alcohol and firearms. At the same time there came among them men and women whose object it was to wean them from the customs and beliefs of their fathers and replace them by others of a very different kind.

In addition to the means of death in the form of firearms brought with them by their visitors, there came also the far more deadly diseases, which swept many out of existence and enfeebled the vitality of those who were left. Following the coming of these various influences from without, the numbers of the people so rapidly declined that now, less than a century after the first settlement of Europeans, there are islands, once full of life and vigour, which are either wholly unpeopled or show a miserable remnant to tell the tale of their misfortunes.

It is intended to publish shortly, under the auspices of the Melanesian Mission, an account of the decrease of the population, with a discussion of its causes. I must be content here to give you a few examples from my own observation. In many islands of the New Hebrides the population has practically disappeared. The large island of Fate (Sandwich Island) once had an extensive population spread over the whole island, but when I was there four years ago I could not discover that there were any survivors of the people of the interior, all the existing inhabitants living on a few small islands on its coasts. Further north, the shores of the island of Aore are strewn with sherds of the old native pottery, showing the former presence of a considerable population, but I was told that there are now only three surviving inhabitants. In Espiritu Santo, usually known as Santo, the largest island of the New Hebrides, the inhabitants of several villages on the western coast have entirely disappeared, and their place is taken by a few wretched people who have moved down from the interior.

At the southern end of the island the people of Vulua 20 years ago numbered at least 200, according to the statement of the Rev. J. G. Bowie, the missionary of the district. Now there is only a mere handful of miserable people collected together in one small village, fully conscious that they are the last dying remnant of a once happy and prosperous tribe.

The same story holds good of the Banks and Torres Islands to the north, the destruction having been especially great in the latter group. In the Santa Cruz group, large islands which are said to have been well peopled are now uninhabited, the decline here having been especially great during the last few years. In the Solomon Islands, the tale is less pitiful, but here also the population of many islands is diminishing so rapidly that unless something is done to stay the decline, it will soon share the fate which has already overtaken so many parts of the New Hebrides.

Rapidity of Decline.

The rapidity of the decay at the present time has been brought home to myself very closely by two instances which, though of no great value as evidence, may yet be cited in illustration.

During a visit in 1908 I gained a large amount of valuable information from two men, fairly young and apparently full of life and vigour, one a Polynesian living in Melanesia, the other a native of the Banks Islands. I looked forward to their help in future visits to their islands, but before I had had time to record the knowledge they had shared with me I heard that both were dead. In 1914 I was again in Melanesia and obtained from a still younger native a most important account of a district in the island of Ambrim, whose people had been almost entirely uprooted and destroyed by a volcanic catastrophe. Before I have been able to put this fragment of vanishing knowledge upon record I hear that the witness is already dead, a victim to the scourge of dysentery.

Analysis of Causes of Decline.

Having given this brief sketch of the people of Melanesia and of their impending fate, I shall now attempt an analysis of the causes to which their decline is due and consider measures by which a mortal ending of the disease may even yet be averted.

I will begin with one group of factors which has been frequently brought forward in explanation of the decline of population. It has been supposed that the Melanesians were already a dying people before the European invasion, and that their decline was due to faults inherent in their own culture. In the first place, there is no evidence of any value that the people were decreasing in number before the settlement of Europeans. It may be true that here and there the people already showed some signs of diminution on the arrival of the missionaries, to whom we chiefly owe these reasons. It must be remembered, however, that the people had already been subject for many years to certain European influences, and those of a far from harmless kind.

When these apologists for the effects of their own civilisation give reasons for the supposed original decadence these often bear their own refutation on the face. Thus, one writer blames the heathen custom of polygamy, but in the same paragraph states that the practice is confined to the few. As if a custom confined to the few could ever be the cause of the dying out of a whole people. As a matter of fact, the polygamy of Melanesia is very different from that of Africa, being so exceptional, and the number of wives so small, as to have no appreciable influence upon the people, whether for good or evil.

Another cause which has been put forward is the special kind of consanguineous union usually known as

the cross-cousin marriage. This is a marriage between the children of a brother and sister which takes place habitually, while marriage between the children of two brothers or of two sisters is strictly forbidden. This subject was fully investigated by the Commission which, more than 20 years ago, inquired into the decrease of the native population of Fiji. In their report,[2] which forms a storehouse of most valuable facts concerning our topic of to-day, it is shown conclusively that this factor had not contributed towards Fijian decadence, but rather that these consanguineous marriages were more fruitful than marriage between wholly unrelated persons.

I shall deal presently with native customs in relation to our subject, and hope to show that it is rather the indiscriminate and undiscriminating interference with them which stands forth prominently among the causes of decay.

In turning to the real causes of the decrease of population in Melanesia, it is necessary to bear in mind the double nature of fluctuation in population which is fully recognised among ourselves. Diminution of population may be due either to increase of death-rate or decrease of birth-rate, or to both combined. I shall bring forward definite evidence to show that it is necessary to distinguish between these two factors in Melanesia.

Influences increasing the Death-rate.

I will begin with the group of causes which has hitherto chiefly attracted attention, the causes, immediate and remote, of increase of the death-rate.

In a subject in which we shall find little on which to pride ourselves it is satisfactory to be able to exclude one cause which has contributed in so small measure to the decay of native races in other parts of the world. There has been no deliberate attempt to exterminate the people such as has disgraced the history of our relations with regions more suited to European habitation than the sweltering and unhealthy islands of Melanesia. The injurious influences due to European rulers and settlers have been unwitting. Owing to the need for the labour of those accustomed to the tropics it has always been in the interests of the settlers that the native population shall be alive and healthy. In so far as native decay is due to European influence we have to lay the blame on ignorance and prejudice, not on any deliberate wish to destroy.

Disease.—In considering the death of a people, as of an individual, it is natural to think first of disease. Disease is the name we give to a group of processes by which the size of a population is adapted to the needs and demands of its environment. It is one of the means by which the size of a population is adjusted so as to enable it best to utilise the available means of subsistence. Before the arrival of Europeans Melanesia had its own diseases, by means of which Nature helped to keep the population within bounds. Everything goes to show that the population of Melanesia was well within the limits which the country was capable of supporting, but it is not so certain that it was far within this capacity in relation to the very simple means the people possessed for exploiting its resources. So far as we can tell, there had been set up a state of equilibrium between the size of the population and the resources of the country. All our recent knowledge goes to show that the diseases due to infective parasites tend to set up a state of tolerance and habituation which renders a people less prone to succumb to their ravages, and there is no reason to suppose that Melanesia was any exception in this respect. Thus the people are largely habituated to the malaria which certainly existed among them before the coming of European influence.

Into this community thus adapted to the infective agents of their own country the invaders brought a number of new diseases—measles, dysentery, probably tubercle and influenza, and last but, unfortunately, far from least potent, venereal disease. These maladies had effects far more severe than those they bring upon ourselves, partly because they found a virgin soil, partly because the native therapeutic ideas were not adapted to the new influences, so that remedies were often used which actually increased their harmfulness. Many of these introduced diseases are still drawing a large toll on the numbers and energies of the people, the two which seem to be exerting the most steady influence, so far as my observations show, being dysentery and tubercle.

Alcohol.—A second group of introduced causes of destruction is composed of what may be called the social poisons, such as alcohol and opium. Though it is possible that the people use tobacco somewhat to excess, the only poison which needs to be considered in Melanesia is alcohol. In certain parts of Melanesia there is no question that it has exerted in the past, and is still exerting, a most deleterious influence, but it is satisfactory to be able to say that its noxious influence has been reduced to negligible importance in those parts of the archipelago which are wholly subject to British rule, where it is penal to sell or give alcohol to a native.

Firearms.—A third direct cause of increase of the death-rate is the introduction of firearms, by means of which the comparatively harmless warfare of the natives is given a far more deadly turn, but this cause has never been very potent in Melanesia, and is now well under control.

(To be concluded.)

[2] Report of the Commission appointed to inquire into the Decrease of the Native Population (Colony of Fiji, Suva, 1896.

ANNUAL REPORT FOR 1918 TO THE BOARD OF EDUCATION.

THE annual report for 1918 of the chief medical officer of the Board of Education deals fully with the medical aspect of the new powers and duties of education authorities under the Education Act, 1918. The former requirement of medical inspection in public elementary schools is extended to secondary and continuation schools. Local education authorities now *must* secure medical treatment for public elementary school children, and *may* extend it to pupils in other schools: the employment of any individual child may be prohibited by new by-laws upon the report of a school medical officer: physical training of children and young persons up to 18 years of age is facilitated by local education authorities being enabled to make provision for holiday camps, playing fields, and other arrangements for social and physical training in the day or evening.

Medical Inspection in Secondary Schools and Continuation Schools.

The purpose of medical inspection is somewhat different at present in secondary and elementary schools. In secondary schools education is continued to a later age, and includes the period of puberty, during which the pupils, and especially the girls, are liable to mental and physical fatigue and overstrain. Athletic exercises play a larger part in the curriculum: medical inspection is directed towards the detection of tendency to cardiac weakness or other physical defect likely to be increased by any special form of physical exercise. The Board state that a full examination should be made at the ages of 12 and 15 years, and a yearly examination after 12 years of age, the degree and extent of which would vary according to the previous record and other circumstances of the pupil. The inspections which have already been carried out show that 25 to 50 per cent. of the pupils are usually found to require treatment, mostly for dental caries, defective vision, enlarged tonsils, disorders of the heart, malnutrition, anæmia, spinal curvature, and flat-foot. Treatment is usually given by the family doctor, except in certain municipal schools, where advantage is taken of facilities provided by the authority.

A new chapter in preventive medicine is opened by the extension of the work of the School Medical Service through the all-important period of a child's life, when he is passing from the years of school age to those of choice of, and entry into, some branch of employment. Medical inspection at the continuation school is necessary to detect defects which may render particular forms of

employment unsuitable for a young person. It is also required in order to ascertain new or accentuated defects arising from employment, especially for the detection of any poisoning, lung trouble, injury to vision, cardiac strain, tuberculosis, or other physical damage likely to be caused by any special form of industrial employment. If a welfare supervisor or a similar person appointed by a firm assists the medical officer in securing treatment for defects special care must be taken to avoid any suggestion that the results of medical inspection are being used unfairly to prejudice prospects of employment. It will generally be found most convenient to extend to pupils in continuation schools the "clinic" and other facilities available for children in elementary schools. A fair number of industrial concerns have made, in connexion with their welfare schemes, certain definite provision in respect of the physical well-being of young persons and others in their employ. A whole-time medical officer is often employed; all new employees are medically inspected; dental inspection and treatment, baths, remedial exercises, and meals are provided. Where such whole-time medical officers are employed the introduction of the medical board system would be useful with the school medical officer or one of his assistants as a member of the board. In this way the school medical officer will be thoroughly familiarised with the type of defect or child unsuitable for any form of employment offered by the firm, and coöperation between the medical officer of the firm, the school medical officer, and the juvenile employment officer of the education committtee will be facilitated. The Lincs (Lindsey) Education Committee have drawn up a set of draft rules, given in the report, which should serve to ensure that no child is employed in a manner prejudicial to his health and education.

Physical Training.

Sir George Newman points out that physical training is not playing the part it should in the education of children and young people. Physical training cannot be properly organised without organisers; he is, fortunately, able to record that 51 authorities are now employing recognised organising superintendents, a very considerable increase having been made within the last year or two. No longer is it necessary for men to seek training abroad; one-year courses of physical training have now been arranged at the Municipal Training College for Men at Sheffield, primarily for certificated teachers who have served with the Army Physical Training Staff and have shown special ability for physical training. The Board of Education are encouraging the treatment of such deformities as spinal curvature at school clinics by remedial gymnasts. At present 68 bodies (local education authorities and voluntary associations) are conducting approximately 254 play centres; the organiser of physical training should be closely associated with these centres and be generally responsible for the games, dancing, physical training, &c., which form an important part of the training.

In the autumn of 1918 the Board appointed a small representative committee to consider recommendations invited from experienced gymnastic teachers as to alterations of the existing syllabus of physical exercises. As a result, two pamphlets have been issued, one dealing with physical exercises for infants, the other with suggestions in regard to games, and the syllabus has been slightly modified. Generally speaking, the new syllabus is less formal, "breaks" rather than rests between the exercises have been recommended and half the lesson, it is suggested, should be given up to "general activity exercises," including games.

In view of the importance of open-air education, all those interested in education will welcome the experimental arrangement of the London County Council, whereby grants are made towards school journeys. The remainder of the costs are borne by the parents and the School Journeys' Association. Liverpool and Birmingham are among the other authorities which make similar provision.

Surgical Tuberculosis.

Mr. H. J. Gauvain, in a report on a hospital school for the treatment of surgical tuberculosis, invited by the Board of Education, states that "tuberculosis officers, while recognised experts in the treatment of pulmonary tuberculosis, have often had little experience in the diagnosis and treatment of surgical tuberculosis. Facilities for their instruction in surgical tuberculosis should be available at special hospitals devoted to that condition. School medical officers would also greatly benefit by a course of special study at such special hospitals, as earlier diagnosis of surgical tuberculosis would then be often possible with its corresponding advantage to the patient." Study leave is provided by the Navy, Army, and Indian Medical Services; similar provision for members of the Public Health Service can only be a matter of time.

Coöperation Between School Attendance Officers and School Nurses.

Satisfactory arrangements are necessary to ensure full coöperation between school attendance officers and school nurses. Absence from school is largely on account of illness, real or alleged; progress is being made in the appointment of officials equipped with the medical knowledge necessary to carry out the work satisfactorily. A school attendance officer, useful as is his work on the penal side, cannot be expected to have the knowledge of medical work possessed by the school nurse, who has given at least three years of her life to hospital work. The need for school attendance officers will always exist, notably in rural areas, but in towns, when vacancies occur, the readjustment of the work and the advisability of the appointment of an attendance officer nurse should be considered. At Bradford it has been decided to appoint four women as attendance officer nurses. Their duties will be to visit and report on all cases referred to them by the ordinary officers in which ill-health is given as a reason for persistent irregular attendance; they will either take steps to secure that the necessary medical treatment is obtained by the parents or refer the matter to the prosecuting officer.

Prosecutions have for the first time been undertaken for neglect of children who had suffered from scabies. In 1918 the education committee of the Durham County Council authorised legal proceedings to be taken under Section 12 of the Children Act, 1908, against parents whose children had suffered from scabies for many months, after having been instructed in the methods of ridding their family of the disease. As a result in 7 out of the 10 cases the children were cured before the adjourned cases were re-heard, and Dr. Eustace Hill was able to report that scabies decreased in the county.

Provision of Meals.

In the section on the provision of meals is included a very practical résumé of the Memorandum of the Committee on Accessory Food Factors or Vitamines. The quantities required for one-course non-meat dinners for 100 children as provided at Hull are given. Dr. E. J. H. Fraser states that the change to vegetarian diet which was necessitated by the compulsory rationing of meat caused some trouble at first, the children appearing to dislike the food, but later they consumed it with enjoyment. Meals containing beans were not popular. In view of the advisability of a mixed meat and vegetarian diet and the indisputable fact that it is the meat element of the diet that parents fail to provide such vegetarian meals should only be provided when circumstances prevent the use of meat. For rural schools where the children come from a distance the arrangements for the supply of a mid-day meal at a West Sussex school serve as a model. The regularity of the attendance was unusual—95 per cent. for nearly three years. The school includes 60 infants, many of whom live from one and a half to three miles away.

The Blind.

A school medical policy for the blind child is outlined in the report: the especial need of nursery school provision and vocational education is clearly demonstrated; no less than 12 per cent. of the blind have not

received any form of industrial training. The Departmental Committee on the Welfare of the Blind recommended the expansion of facilities for the separate elementary education of myopic and partially sighted children. The number of blind persons of all ages in England and Wales is 33,965; of these the Advisory Committee on the Welfare of the Blind were able to obtain information relating to 25,840; 20 per cent. of the blind population they ascertained suffer also from mental deficiency, including epilepsy and serious nervous debility. It is fortunate, therefore, that the Birmingham Institution for the Blind, in conjunction with the National Institute for the Blind, propose to establish an institution for some 100 blind mentally defective children at Smethwick. A small institution for 39 blind mentally defectives is already provided at Hastings; the need for a similar institute for the North of England is self-evident.

There is a secondary school for the blind—the Worcester College for the Higher Education of the (Male) Blind, whence half the pupils proceed to the universities. The list of old pupils securing successful careers includes 41 clergymen and ministers, 8 teachers of music, 7 teachers of other subjects, 1 barrister, 5 solicitors, 4 engaged in commerce, 2 masseurs, and 4 farmers. The remainder include many boys of independent means who live at home. Sir Arthur Pearson contemplates the establishment of a school for the higher education of girls at Chorley Wood.

Medical and Dental Treatment.

The provision of medical treatment for elementary school children has reached such a stage that it is reasonable to give the number of authorities who have not made such provision. Of 318 authorities 58 have not provided treatment for minor ailments, 76 have made no provision for treatment of defective vision, 83 no provision for supplying spectacles, 149 no arrangement for treating dental defects, and 189 provide no treatment for enlarged tonsils and adenoids.

The section on dental disease and treatment includes quotations from three significant reports dealing with the whole question—viz., the report of the Departmental Committee on the Dentists' Act, 1878, the proposals of the British Dental Association, and the special report of Mr. Norman Bennett, the chairman of the Representative Board of the British Dental Association, who was requested by the Board of Education to visit various school dental clinics in a consulting capacity and report as to their working and administration. The reports differ as to the advisability of meeting the shortage of qualified dentists available for the treatment of school children by the appointment of dental dressers working under the supervision of a qualified school dentist. The Departmental Committee strongly expressed their approval of a system of dental dressers in school dental work under competent supervision, but their recommendation must be read in connexion with their recommendations respecting the reorganisation of the dental profession. The National Dental Service Committee, whose suggestions were adopted by the Representative Board of the British Dental Association, considered that in suitable cases and under careful regulations senior dental students might be allowed to work in school dental clinics. Mr. Bennett holds that the value of dental dressers remains problematical; if they should come to be employed extensively they should be given a special course of training at a dental hospital. He is convinced that "if the dentist were operating on his own patients he could not effectually supervise more than two dressers using chairs one on each side of his own; if he were only supervising but not operating he could, of course, manage more; each of these dressers, however, would frequently be in need of assistance, and the dentist ought in any case to do a considerable amount of operating on the patients of his dressers." He makes the obvious point that the usefulness of dental dressers must be limited to urban districts where there are several chairs in one room, but when we consider that Cambridge, with a school population of 7500, can find work for three whole-time school dentists it is clear that, even if the services of dental dressers are limited as above, there is ample scope for their employment. Mr. Bennett considers that, although some school dentists desire autonomy, school dentistry has intimate relations with school medical treatment, of which, indeed, it forms a part. He is strongly of opinion that more effective supervision is necessary, but that the control should be central, and that there is at present little check on the general organisation of the school dentists' work. There can be no possible objection to the work of school dentistry as a whole being inspected by a dental inspector of the Board of Education; his visits would in all probability be as welcome to the school dentists as those of the medical inspector of the Board of Education are to the school doctor. In view of the developments in the direction of providing treatment for expectant and nursing mothers and tuberculous patients, almost always in association with the school dentist, and of the proposal for inspecting and treating dental disease in children under 5 years of age, it would be extremely unfortunate if the dentists' work were removed from the general direction of the school medical officer, who is usually the medical officer of health. Mr. Bennett's report is very valuable both to the 169 school medical officers who are ultimately responsible for existing school dental clinics, and to the school medical officers on whom is placed the duty of making arrangements to initiate new schemes of school dental treatment. He clearly indicates the need for dental treatment before the age of 7 years; all children should be inspected and treated as soon as possible after reaching the age of 5 years. The maximum interval before re-inspection should be one year. General or local anæsthetics should, practically always, be used for the extraction of permanent teeth; for temporary teeth they are not usually necessary unless several are to be extracted, when a general anæsthetic is very desirable; local spray or other application is very useful for the extraction of loose or insignificant temporary teeth or roots. The custom of giving monetary rewards to children who silently endure painful extraction Mr. Bennett considers to be radically wrong; the infliction of unnecessary pain is scientifically obsolete and an important deterrent of future treatment.

The work of school dentists should be extended beyond the treatment of caries, sepsis, and stomatitis to the treatment of irregularities of position. The more strictly local irregularities, sometimes associated with abnormal variation in the periods of shedding and eruption of teeth, offer no difficulties to the average school dentist; complex cases involving jaw formation would be without the scope of a school clinic, but the education authority should make arrangements for their treatment at special hospitals in the larger cities and towns. Other kinds of work which might occasionally be practised justifiably at the school dental clinic include crowns for fractured incisors and obturators for cleft palate. The dentists are pleased to carry out these additional forms of work; they help to make the appointments more attractive; and anything which enlarges the scope of the duties and relieves the monotony is of advantage to the patients as well as the dentists. The school dental clinic should be fitted with a supply of hot and cold water; pump-chairs adapted to children should be installed in all whole-time clinics; electrical engines justify their expense by increased efficiency, reduction of pain, and saving of time. Every recovery room should be provided with a sink and both hot and cold water.

In London, in addition to the routine work of dental inspection and treatment, arrangements have been made for supplying at cost price tooth-brushes, tubes of tooth-paste, and small tablets of permanganate of potassium for making an antiseptic mouth-wash. A special investigation was carried out by Mr. C. Edward Wallis in South London, where some of the parents were attracted by advertisements of dental companies trading locally. The dental work of these companies was execrable; the fees charged were often in considerable excess of those charged by the properly qualified dentists.

Coöperation and Progress.

Evidence of coöperation between the Ministry of Health and the Board of Education is afforded by the regulations on the training of health visitors and of midwives which have been issued as the result of the consultation between these two Departments. The report is emblematic of the times, its note is progress, it bears evidence of thought which has been slowly maturing during the lean years of high thinking and enforced low living. Sir George Newman has a genuine gift for educating his readers.

THE REPORT OF THE COMMITTEE UPON ANAEROBIC BACTERIA.[1]

THIS report summarises in a very readable form our present-day knowledge of most anaerobic bacteria, of the morbid conditions they may cause, and of the surgical and serum treatment which should be practised. It is the conjoint work of a committee under the chairmanship of Dr. William Bulloch, F.R.S., assisted in certain sections by writers with special knowledge. The volume is packed with information, and should be of great help to laboratory specialists, and of first interest to the thousands of medical officers whose unhappy duty it was to treat and care for the cases of gas gangrene and tetanus during the war.

The section devoted to the clinical features of anaerobic infections of wounds is written by Dr. John Fraser; the committee are responsible for the bacteriology and biochemistry of anaerobes, for the section dealing with the experimental study of gas gangrene, for the description of toxins and antitoxins and their therapeutic use. Major W. J. Tulloch writes a special section on recent work on tetanus, Dr. A. Fleming contributes an article on the aerobic organisms found in wounds, and Dr. E. H. Kettle writes an account of the histo-pathology of gas gangrene.

The varieties of disease which anaerobic bacilli may set up in a wound vary from comparatively localised infections—gas abscess—to spreading massive œdema and the extraordinarily fulminant cases of gas gangrene. The type of disease which occurs does not apparently depend entirely on the particular species of anaerobe found in the wound, but is affected by circumstances not yet completely unravelled. Clinically it is found that the nature of the wound, the general condition of the wounded man, the vascular supply, and the regions and tissues affected all have some influence upon the final form of the infection; but "the fulminating type stands out in contrast to all other varieties." Whatever the form the infection takes, surgical intervention, and usually of a drastic order, is called for; this varies naturally with the extent and nature of the lesion. The detailed consideration of this aspect of the subject is given by Dr. Fraser and must be left to the reader to appreciate.

Anaerobes Found in Soil.

Of the anaerobes found in soil it appears that half-a-dozen are pathogenic to man. Of these, three have been known for many years: *Vibrion septique*, discovered in 1877 by Pasteur, *B. tetani* described by Nicolaer in 1884, and *B. welchii* by Welch in 1892. In the years before the war *Vibrion septique* was generally called *B. œdematis maligni*, a name given to the organism by Koch subsequent to the publication of Pasteur's work. There is now practically no doubt as to the identity of the organisms studied by Pasteur and Koch, though in the first two years of the war great uncertainty existed on this point.[2] The explanation appears to be that neither Pasteur nor Koch gave a sufficiently detailed description of the cultural characteristics of the organisms they worked with, and most, if not all, of the strains maintained in laboratories before the war were impure. The most common impurity present was *B. sporogenes*. This latter anaerobe is powerfully proteolytic, liquefying coagulated serum rapidly, whereas the proteolytic properties of *Vibrion septique* can be detected only by refined biochemical methods. Thus the general description of *B. œdematis maligni* (*Vibrion septique*) found in standard text-books of bacteriology is inaccurate; it is stated to be proteolytic, as tested by ordinary laboratory methods, the error being due to *B. sporogenes*. This point has now been set right by the Anaerobe Committee. The remaining three pathogenic anaerobes, derived from soil, are *B. œdematiens*, *B. fallax*, and *B. histolyticus*. They were all discovered during the war by Weinberg and Séguin, an achievement reflecting great honour on French bacteriology.

The relative frequency of occurrence of these microbes in gangrenous wounds is given by French and English observers as follows: *B. welchii* about 70 per cent.; *Vibrion septique* about 16 per cent.; *B. œdematiens*, *B. fallax*, and *B. histolyticus* the remainder (about 14 per cent.).

Cultural Reactions of the Organisms.

The description of the cultural reactions of these organisms is given in great detail and is remarkably complete. Of the large number of species of non-pathogenic soil anaerobes *B. sporogenes* (Metchnikoff) and *B. parasporogenes* (McIntosh) are the most important. These two germs are distinguished from one another by certain small cultural differences and by agglutination tests. They occur in 25 per cent. of gangrenous wounds, and probably aid the morbid processes in some way not yet exactly understood. Owing to their strong saccharolytic and proteolytic properties they produce in sugary and albuminous media an abundance of acid and gas, of ammonia and amino-acids. The acids may aid the growth of the pathogenic anaerobes directly or by reducing the resistance of the wounded man. In a more or less similar way other merely saprophytic anaerobes (*B. tertius*, *B. cochlearius*, *B. tetanomorphus*, &c.) probably contribute to the production of the gas-gangrene syndrome.

B. sporogenes is widely distributed in nature and is very resistant to heat and antiseptics; it withstands exposure to 100° C. for 45 minutes and survives eight days in 5 per cent. phenol solution. It has already been referred to as the commonest contaminator of *Vibrion septique* and other anaerobic cultures; this is due to the great tenacity to life possessed by the spores and to a phenomenon called, in the report of the Anaerobe Committee, "microbic association." By this is meant the "power of cryptic proliferation within the characters of another species without being detectable." The committee find the capacity of mutual adjustment possessed by anaerobes, and by *B. sporogenes* in particular, to lie at the root of nearly all the more serious confusions and discrepancies in the literature of this subject.

Aerobes Found in War Wounds.

In the section devoted to the aerobes found in war wounds Dr. Fleming shows that the primary infection is fæcal in origin. Thus the *Streptococcus fæcalis* is found in 38·8 per cent. of cases on admission to the casualty clearing station, whilst hæmolytic streptococci occur in only 18 per cent. After a week's sojourn in hospital the percentage of the latter type of coccus increases to 90 per cent.—that is to say, the comparatively harmless, or merely saprophytic, organism tends to disappear, whilst the pathogenic and often dangerous *Streptococcus pyogenes* appears more frequently. The same phenomenon is to be observed with respect to other organisms. Whence the source of this secondary infection? Is it by direct spread from surrounding skin or is it a hospital infection? Levaditi and Debez have brought forward interesting observations which bear upon this question. They found that 54 per cent. of the English soldiers had streptococci habitually in the epithelial squames of the skin, whilst among Belgian soldiers in rest the percentage is as low as 12. They further state that wounds of Belgian troops were less often contaminated with streptococci than were those of English troops. We

[1] Medical Research Committee, Special Report Series, No. 39. By Drs. W. Bulloch, S. R. Douglas, W. E. Gye, H. Henry, J. McIntosh, R. A. O'Brien, Miss M. Robertson, and C. G. L. Wolf.

[2] THE LANCET, 1918, i., 188.

have here some evidence that direct spread from the skin plays a part, but, allowing for this, the evidence is practically conclusive that the majority of cases are infected during the dressing of wounds in hospital. It is borne out by common experience of *B. pyocyaneus* infections. If a wound in a ward is infected with this chromogenic organism the other cases in the ward soon show evidence of its presence unless the most rigid precautions be taken.

Among many interesting observations recorded in this section reference may be made to the work of Canadian officers on the occurrence of true diphtheria bacilli in wounds. FitzGerald and Robertson reported that out of 67 cases arriving in Toronto between May 20th and June 7th, 1917, *B. diphtheriæ* was discovered in 40. This very high percentage was subsequently explained by the fact that one of the nurses who dressed wounds had a digital lesion infected by this organism. Apart from such an exceptional occurrence it has been found that 2 out of 306 wounds were infected with *B. diphtheriæ*.

The Influence of Aerobic Bacteria on the Growth of Pathogenic Anaerobes in Wounds.

This subject has been investigated by a number of observers, especially in France. In the course of experiments on the ætiology of tetanus, made as long ago as 1893, Vaillard and Rouget found that the spores of *B. tetani* when deprived of toxin by the application of heat were non-pathogenic for animals of a susceptible species, and that pathogenicity could be restored by protecting the spores against phagocytes. This it was found could be achieved by injecting other organisms along with spores or by protecting the latter by means of sand; also by inhibiting the migration of leucocytes to the site of inoculation by means of lactic acid. The general conclusion arrived at was that spores or bacilli unprotected by one or other of the above-mentioned devices are rapidly ingested by phagocytes and prevented from dividing and producing toxin. Similar experiments were made by Besson with *Vibrion septique* with the same results. The spread of the primary anaerobic infection in wounds is attributed by Tissier to the action of associated aerobic bacteria. He maintains that when the aerobes are harmless saprophytes (as they generally are for the first two or three days after the infliction of a wound) "the anaerobic infection is slow: it is more rapid when the associated bacteria belong to the pyogenic group; and it tends to become fulminating when the streptococcus is present." There is undoubtedly some truth in these general contentions, but in face of the fact that pathogenic anaerobes are constantly found in association with virulent streptococci in non-gangrenous wounds it cannot be held that pathogenic aerobes play a predominant part in the ætiology of gas gangrene. Further, experimental work carried out during the war has shown that the main conclusions of Vaillard and Besson and others are probably incorrect. Evidence has been brought forward showing that water-soluble constituents of cultivated soil play a part in the genesis of these grave infections. An account of these researches are found in the section on experimental gas gangrene.

Description of Toxins.

The general mode by which anaerobic bacteria effect pathological changes is by the production of toxins and by invasion of the tissues, the latter depending upon the former. A careful study of the toxins elaborated by these organisms has therefore been made, and is fully described in the report. Of many points of special interest one or two may be touched upon here, with the assumption that the full document may be referred to.

The general properties of these poisons are as follows: They are unstable to heat, being destroyed at 70° C. in 30 to 60 minutes; they depreciate considerably when filtered; and they are rapidly destroyed by acids.

The toxin of *B. welchii* is hæmolytic both in vivo and in vitro; it necroses muscle and causes the production of a serous œdema in the subcutaneous tissues; it is antiphagocytic. The killing dose of this toxin is very high compared with that of diphtheria and tetanus—namely, about 0·25 c.cm. *Vibrion septique* produces a toxin with very similar properties, except that when it is injected subcutaneously or intramuscularly very large doses are required to kill an animal; injected intravenously, however, the toxin kills an animal (rabbit or mouse) in a few minutes. The absence of a definite incubation period is very remarkable. The toxin of *B. œdematiens* is extremely potent; a killing dose of 0·0003 c.cm. is often observed.

All three of these toxins have antigenic properties and the antisera obtained are found to neutralise each of the poisonous qualities enumerated above. When a dose of culture of one of these organisms is mixed with an appropriate amount of antiserum, and the mixture is injected under the skin, the animal remains in good health. The serum neutralises the toxin in the culture and the bacilli, being non-pathogenic in themselves, are phagocyted and destroyed. An animal may also be protected against a lethal dose of culture by prophylactic injection of the serum, but when the serum is injected separately, and after the culture, the animal, as a rule, dies. This applies particularly to *Vibrion septique*; with *B. welchii* the interval between the injection of the culture and (later) of the serum may be several hours and protection is obtained. With *Vibrion septique* it is rare that an animal is saved by serum which is administered subcutaneously or intramuscularly even a few minutes after the culture. When, however, serum is administered intravenously its curative effect becomes evident; an animal which is already ill from the effects of an injection of a broth culture of either *B. welchii* or *Vibrion septique* may often be saved by the intravenous injection of large doses of potent antisera.

Conclusion.

The practical conclusion to be drawn from these experiments is that antigas gangrene serum must be given as early as possible, in as large doses as possible, intravenously and also subcutaneously in the region of the wound. Occasional cases of this horrible complication of injuries occur in civil practice, and the correct method of using serum ought to be widely known.

Antigas gangrene serum was not prepared on a large scale until the last year of the war, and consequently its therapeutic properties were never properly tested. The serum to be effective must be polyvalent. It must, at least, protect against *B. welchii*, *Vibrion septique*, and *B. œdematiens*. The first supplies sent to France were monovalent, and it was not until the last few months of the war that an active polyvalent serum could be produced in large quantities. The records of its use in war must be interpreted, therefore, in the light of these facts. So far as these records can be analysed they show, the committee consider, "that the results obtained in France have exceeded expectations."

The more technical parts of the book, such as the biochemical and histological section and the account of recent researches on tetanus, are too intricate to make any short summary of value. The bibliography is surely a record of completeness, and will alone render the volume indispensable to all investigators in the field of anaerobic bacteria.

TUBERCULOSIS.

Life Assurance and Tuberculosis.

IN a paper read before the Assurance Medical Society on Nov. 5th, and published in the January number of *Tubercle*, Dr. Otto May has reviewed the problem of life assurance as related to tuberculosis in the light of recent research. This has undoubtedly provided much useful material to guide the medical examiner for life assurance in his estimate of the expectation of life in any given case showing one or more of the stigmata of tuberculosis. But the discussion which followed the reading of Dr. May's paper, and which is to be resumed on Jan. 7th, revealed certain divergences of opinion, as well as gaps in our knowledge of this particular problem. We may, indeed, claim to have advanced our knowledge of tuberculosis since a distinguished physician a genera-

tion back confessed that of one thing only could he be sure—his prognosis would be wrong. But it would be presumptuous folly to argue that whereas we were blind, we now see. We are still groping. Let us take, for example, the relation of wealth to the mortality from tuberculosis. Tuberculosis is a disease from which, speaking broadly, the poor man dies and the rich man recovers. But there are no reliable data to express this difference with the necessary exactitude. Again, the relation of mental stability to tuberculosis is but imperfectly understood; we know that the mentally defective and the insane are peculiarly liable to contract fatal tuberculosis, and every sanatorium physician has good reason to endorse the aphorism—no fool ever recovered from tuberculosis; blind to his general interests he does not benefit by institutional regimen. But of the tuberculosis rate among the mentally ill-balanced or merely stupid, as compared with intelligent persons, we know little; we may have a shrewd suspicion that a well-balanced mind and a stable nervous system are of enormous importance, but we cannot at present express the significance of these factors in actuarial terms.

Dr. Hector Mackenzie, in his discussion of Dr. May's paper, referred to the much-quoted investigations by the late Dr. C. Theodore Williams, who found that the average duration of life after the outbreak of the disease was about eight years. This conclusion was arrived at by mixing shorter cases with longer ones—a process giving no clue to an intelligent discrimination of individual cases. Such an analysis is almost as misleading as an estimate of the mortality of the fevers of the enteric group investigated on the same lines. It is far from enough for the life assurance examiner merely to know that the average expectation of life for a consumptive is eight years; he wants to distinguish between the short and the long case. He may often not be able to do so at once. He has, however, a most useful guide in the findings of various sanatoriums, Midhurst in particular, which show that after the first three years the prognosis for the patient discharged from a sanatorium is comparatively good. These are the important investigations that enable the life assurance examiner, in the words of Dr. May, "to recommend for acceptance, with a moderate contingent debt, cases with a history of phthisis dating back five years, who appear free from all symptoms and signs of active disease." It may be noted that neither in Dr. May's paper nor in the discussion that followed was any direct reference made to Dr. J. Brownlee's investigations into the characteristics of various forms of tuberculosis as manifested at the different periods of life. If confirmation of his views is forthcoming (and it appears that Dr. Arne Fisher, in a recent analysis of the male tuberculosis mortality of Christiania in the period 1900–1910, endorses Dr. Brownlee's findings) we may have to alter some of our conceptions in relation to life assurance and other aspects of the tuberculosis problem. At present we still cannot tell why tuberculin achieves a few dramatic successes which punctuate, as it were, the long lists of its negative or even harmful results. We may guess, but we cannot yet be sure, that these apparently conflicting observations are the outcome of our inability to differentiate between various strains of the tubercle bacillus, and that if we can distinguish between the members of the tubercle family, as we already do between the members of the typhoid family, we shall have advanced a long way towards a surer prognosis and a more rational and specific treatment. Such a differentiation may tell us why one case terminates fatally in a few months, while another survives by half a century the first manifestations of the disease, and justifies the saying of an American physician that the secret of long life is to suffer from an incurable illness and to have learned how to take care of oneself.

It is impossible to follow this discussion of life assurance in relation to tuberculosis without being driven to the conclusion that, as matters now stand, the potential consumptive is most heavily handicapped just at a point where an equal start or a substantial handicap in his favour is much needed. So long as life assurance is a matter of private enterprise, it is obvious that the medical examiner must make the interests of his employers his first object. The medical profession has, however, duties to discharge also to the sick and to the community at large. And it is in the interests of neither that the potential consumptive should be penalised in such an important matter as life assurance. The doctrine of taking from him that hath not might in this case find some justification if, in stamping on the tuberculous, we were stamping out the disease. But the reverse principle is much nearer the truth and, quite apart from any element of philanthropy, the community should realise that, in shouldering the burden of the consumptive, it is taking a most important step towards protecting itself and eliminating the disease. Hitherto this burden has been shouldered half-heartedly, even grudgingly; the result of this attitude is evident in the candid confession of failure recently voiced by the medical adviser to the London Insurance Committee in his report on a system conspicuous both for lack of sanatoriums and of other "benefit."

Tuberculosis under the Insurance Acts.

Recent questions in Parliament have elicited from the Minister of Health some points in regard to the Government's plans in dealing with tuberculosis. Dr. Addison stated that he was not at all satisfied with the results obtained under the Insurance Acts, but to circumstances connected with the war it was fair to attribute the larger part of the incomplete success attending the measures inaugurated in 1911. Steps, he added, were now being taken to carry out the recommendations of Sir Montague Barlow's Committee; the system of administration was being overhauled, but it would take a generation to catch up. Dr. Addison thought the formation of a special department at the Ministry of Health for tuberculosis to be most undesirable.

The Cost of Tuberculosis Treatment.

The amount expended by public authorities in England and Wales on the treatment of tuberculosis during the financial year 1917–18 was approximately £1,550,000. This is the latest period for which complete figures are available. It is estimated that the expenditure during the present financial year will exceed £2,000,000. In neither case is the expenditure defrayed by loans included in the figures.

The numbers of persons who have received sanatorium benefit in England and Wales during the past five years are as follows: 1914, 31,793; 1915, 29,741; 1916, 29,850; 1917, 31,566; 1918, 35,430.

Open-air Orthopædic Hospitals.

The proposals of Sir Robert Jones and Dr. G. R. Girdlestone, of Oxford, for the establishment under the Ministry of Health of open-air country orthopædic hospitals for children suffering from rickets, infantile paralysis, and surgical tuberculosis on the model of the Baschurch and Stokes centres for crippled children, are under consideration at the Ministry. Dr. Addison described their scheme in Parliament recently as one (a very important one) of those special institutional services which greatly need development, and which are now under the direct consideration of the Consultative Councils.

Sanatorium Accommodation in East Sussex.

There are six approved sanatoriums in the county of East Sussex, including the county boroughs of Brighton, Eastbourne, and Hastings. These contain accommodation in all for 248 patients—146 men and 102 women and children. The 146 beds are all available for discharged soldiers. The need for further accommodation is being met by the purchase by the County Council of a site and buildings with a view to the provision of a new sanatorium of 120 beds.

THE John Rylands Library in Manchester is making progress with its scheme of restocking the lost library of the University of Louvain. The picture is still fresh in the minds of many, showing books, a large proportion of them German books, being thrown out of the windows in September, 1914, by the apostles of German culture. More than 21,000 volumes have now been received and catalogued in Manchester, and a first instalment of these is on its way to Belgium.

KING EDWARD'S HOSPITAL FUND FOR LONDON.

A MEETING of the General Council of King Edward's Hospital Fund for London for the purpose of granting awards was held at St. James's Palace on Dec. 16th, under the presidency of the PRINCE OF WALES. The meeting was an exceptionally important one, because, as we pointed out recently in these columns, the position of hospital finance at the present time, owing to the war, is very precarious. Recognising this, the Fund has made specially increased grants.

Lord REVELSTOKE, the honorary treasurer, said that the receipts on general account to Dec. 6th, after deducting expenses, amounted to £158,338 11*s.* 9*d.* With the help of the League of Mercy the total receipts for the year would be £180,000, and this sum, together with certain undistributed balances, would enable the Executive Committee to recommend the distribution of £230,000.

Sir WILLIAM COLLINS, on behalf of the League of Mercy, said that £17,000 would be handed over to the Fund, an advance of £1,000 on last year's figures, and £3000 on the last pre-war figures.

Report of the Distribution Committee.

The report of the Distribution Committee was presented by Sir JOHN TWEEDY, chairman of the Committee. It stated that the sum of £218,000 was available for distribution amongst the London Hospitals, as against £190,000 in 1918, an increase of £28,000, and that the number of hospitals applying for grants was 107. Of the total amount distributed £174,625 had been applied in the form of grants to maintenance, an increase of £14,375 over the corresponding total in 1918. The following grants in aid of schemes of building expenditure were recommended for renewal under the two years rule: General Lying-in Hospital, £1000 in 1917 to improvements; Hospital and Home for Sick Children, Sydenham (now South-Eastern Hospital for Children), £75 in 1915 to central heating; Queen Charlotte's Lying-in-Hospital, £1000 in 1913 and £650 in 1917 to new out-patient department; Queen's Hospital for Children, £288 12*s.* 11*d.*, balance of £1000 in 1917 to improvements in the out-patient department; St. Mary's Hospital for Women and Children, Plaistow, £1500 in 1913 and £1000 in 1917 to new nurses' home and out-patient department; Victoria Hospital, £200 in 1916 to new heating apparatus.

List of Awards.

Sir FREDERICK M. FRY, the honorary secretary, then presented the list of awards as follows. (It should be noted that the reduction or absence of a grant does not necessarily imply dissatisfaction):—

Acton Hospital, £170.
Alexandra Hospital for Children, £200.
Beckenham Cottage Hospital, £60.
Belgrave Hospital for Children, £1125.
Blackheath and Charlton Hospital, £145.
Bolingbroke Hospital, £1000.
British Hospital for Mothers and Babies, Woolwich, £1730, of which £1500 towards the building of the amalgamated hospital, in accordance with the scheme submitted to the Fund.
Canning Town Women's Settlement Hospital (late Medical Mission), £700, of which £100 to reduce debt.
Central London Ophthalmic Hospital, £550
Central London Throat and Ear Hospital, £225
Charing Cross Hospital, £4600, of which £500 to improvements.
Chelsea Hospital for Women, £2150, of which £1500 to reduce debt.
Cheyne Hospital for Sick and Incurable Children, £400, of which £50 to reduce general fund overdraft.
City of London Hospital for Diseases of the Chest (Victoria Park), £4500, of which £500 to proposed sanitary improvements, in accordance with the scheme submitted to the Fund.
City of London Maternity Hospital, £1550, of which £500 to reduce general fund debt.
Clapham Maternity Hospital, £1025, of which £100 to scheme.
Dreadnought Hospital, £3250.
East End Mothers' Lying-in Home, £850.
East Ham Hospital, £215.
East London Hospital for Children, £2750.
Elizabeth Garrett Anderson Hospital, £1400, of which £250 to the scheme for the adaptation of the adjoining premises for out-patients and nurses.
Eltham and Mottingham Cottage Hospital, £120.
Finchley Cottage Hospital, £110.
Florence Nightingale Hospital for Gentlewomen, £350, of which £100 to reduce debt.
French Hospital, £200.
General Lying-in Hospital, £1600, of which £100 to reduce debt and £1000 to scheme of rebuilding to be submitted to the Fund.
Great Northern Central Hospital, £6100, of which £1500 to new nurses' home in accordance with scheme to be submitted to the Fund.
Grosvenor Hospital for Women, £575.
Guy's Hospital, £11,000, of which £2000 to improvements in nursing accommodation, in accordance with the scheme submitted to the Fund.
Hampstead General and North-West London Hospital, £3200, of which £1500 to reduce debt.
Hendon Cottage Hospital, £30.
Hornsey Cottage Hospital, £25.
Hospital and Home for Incurable Children, Hampstead, £100, of which £50 towards provision of operating theatre, in consideration of the fact that curable cases are admitted.
Hospital for Consumption, Brompton (including Sanatorium at Frimley), £7150.
Hospital for Diseases of the Throat, £625, of which £500 towards loss incurred by postponement of building scheme through the war. The Committee trust that the scheme will be pushed forward as rapidly as possible.
Hospital for Epilepsy and Paralysis, £2225, of which £500 to reduce debt.
Hospital for Sick Children, £4600.
Hospital for Women (Soho-square), £1750, of which £250 to reduce debt.
Hospital of St. John and St. Elizabeth, £675.
Infants Hospital, £900, of which £250 to reduce debt.
Italian Hospital, £400.
Kensington and Fulham General Hospital, £50.
Kensington Dispensary and Children's Hospital, £55.
King Edward's Memorial Hospital (Ealing), £750.
King's College Hospital, £8400, of which £5000 to reduction of debt on removal to South London, making £77,100 in all contributed by the Fund to this purpose.
Leyton, Walthamstow, and Wanstead Children's and General Hospital, £750.
London Fever Hospital, £230.
London Homœopathic Hospital, £1950, of which £250 to reduce general fund debt.
London Hospital, £13,000, of which £1000 to deficit on new nurses' home, in accordance with the scheme submitted to the Fund.
London Lock Hospital, £4150, of which £1050 to maintenance of Harrow-road Hospital, £100 to maintenance of Dean-street Hospital, and £3000 to reconstruction, in accordance with the scheme submitted to the Fund, making £4500 granted to the scheme to date. No further grant will be made to the reconstruction until the Fund is satisfied that the appeal to the public is being actively pressed.
London Temperance Hospital, £2300
Maternity Charity and District Nurses' Home, Plaistow, £350.
Memorial Hospital, Mildmay Park, £550, of which £150 towards installation of electric light.
Metropolitan Hospital, £4500, of which £1000 to reduce debt.
Middlesex Hospital, £8400, of which £500 to reduce debt, and £900 to new nurses' accommodation in accordance with the scheme submitted to the Fund.
Middlesex Hospital Cancer Charity, £500, of which £100 to new nurses' accommodation.
Mildmay Mission Hospital, £675.
Miller General Hospital for South-East London, £4500, of which £2500 is a first grant to the extension of the hospital, in accordance with scheme to be submitted to the Fund.
Mothers' Hospital of the Salvation Army, £1000, of which £500 to new nurses' accommodation, in accordance with scheme to be submitted to the Fund.
National Hospital for Diseases of the Heart, £800, of which £400 to extension of out-patient department, in accordance with scheme to be submitted to the Fund.
National Hospital for the Paralysed and Epileptic, £4000.
Nelson Hospital (late South Wimbledon, &c.), £550.
Norwood Cottage Hospital, £450.
Paddington Green Children's Hospital, £900.
Passmore Edwards Hospital for Willesden, £250.
Passmore Edwards Hospital for Wood Green, &c., £115.
Poplar Hospital for Accidents, £250.
Prince of Wales's General Hospital, £6000, of which £3000 to reduce general fund debt.
Queen Charlotte's Lying-in Hospital, £2000, of which £500 to reduce debt, and £700 to deferred scheme of improvements.
Queen Mary's Hospital for the East End, incorporating West Ham and Eastern General Hospital, £5250, of which £1000 to nurses' home, in accordance with scheme to be submitted to the Fund.
Queen's Hospital for Children, £4500, of which £625 to extinguish debt on old building scheme, and £1000 to scheme for new out-patient department to be submitted to the Fund.
Royal Dental Hospital of London, £500.
Royal Eye Hospital, £700.
Royal Free Hospital, £5000, of which £1500 to new nurses' accommodation, in accordance with the scheme submitted to the Fund.
Royal Hospital for Diseases of the Chest (City-road), £1450.
Royal Hospital, Richmond, £450.
Royal London Ophthalmic Hospital, £2800, of which £500 to new heating apparatus.
Royal National Orthopædic Hospital, £1250.
Royal Waterloo Hospital for Children and Women, £4250, of which £2000 to new nurses' accommodation, isolation wards, and extension of out-patient department, in accordance with the scheme submitted to the Fund.
Royal Westminster Ophthalmic Hospital, £200.
St. Andrew's Hospital (Dollis Hill), £310, of which £250 to reduce building debt.
St. Columba's Hospital, £600, of which £250 to provision of balconies.
St. George's Hospital, £5000.
St. John's Hospital, Lewisham, £675.
St. Luke's Hospital for Advanced Cases, £250.
St. Mark's Hospital, £550, of which £100 to improvements in nursing accommodation.
St. Mary's Hospital, £4500.
St. Mary's Hospital for Women and Children, Plaistow, £3150, of which £2000 to the rebuilding of the nurses' and servants' quarters and out-patient department, in accordance with scheme to be submitted to the Fund.
St. Monica's Home Hospital, £270, of which £100 to sanitary improvements.
St. Peter's Hospital for Stone, £325, of which £200 to new lift.
St. Saviour's Hospital for Ladies of Limited Means (Osnaburgh-street), £230.
St. Thomas's Hospital, £7500, of which £2500 to improvements, in accordance with scheme to be submitted to the Fund.

Samaritan Free Hospital for Women, £1425.
Santa Claus Home, £60.
South-Eastern Hospital for Children (Sydenham), £660, of which £200 to central heating and laundry improvements.
South London Hospital for Women, £750.
Stoke Newington Home Hospital for Women, £120.
University College Hospital, £6800, of which £500 to improvements.
Victoria Hospital for Children, £1,700, of which £250 to central heating.
West End Hospital for Nervous Diseases, £2750, of which £2000 to removal to Regent's Park, in accordance with the scheme submitted to the Fund.
Western Ophthalmic Hospital, £175.
West London Hospital, £6150, of which £1500 to improvements, in accordance with scheme to be submitted to the Fund.
Westminster Hospital, £4800, of which £300 annual grant to acquisition of new site as agreed.
Wimbledon Hospital, £120.
Woolwich and Plumstead Cottage Hospital, £25; special grant to the Woolwich and District War Memorial Hospital Building Fund, £5000.

Report of the Convalescent Homes Committee.

Sir WILLIAM H. BENNETT, chairman of the Convalescent Homes Committee, presented a report which stated that the sum available for distribution amongst convalescent homes and consumption sanatoriums is £12,000, as against £10,000 in 1918. The number of applications eligible for consideration amounted to 49 from convalescent homes and 9 from consumption sanatoriums, as against 45 and 9 respectively last year. The number of beds reserved by the Fund for the use of patients in London hospitals amounts to 66 at six sanatoriums. In view of the universal demand for facilities for dealing with tuberculosis the small number of men's beds which the general hospitals appear to be able to use in this way is a matter which may require further consideration next year. On the other hand, the committee have been unable to secure enough women's beds to satisfy the demand.

List of Awards.

Mr. J. G. GRIFFITHS, honorary secretary, presented the list of awards recommended by the Convalescent Homes Committee.

A.—*Consumption Sanatoriums.*

Children's Sanatorium, Holt, Norfolk, £880, of which £780 in consideration of the reservation of ten children's beds during 1920 for the use of certain London hospitals.
Daneswood Sanatorium (Jewish), Woburn Sands, £460, in consideration of the reservation of four beds during 1920 for the use of certain London hospitals.
Devon and Cornwall Sanatorium, Didworthy, South Brent, £1250, of which £1150 in consideration of the reservation of ten beds during 1920 for the use of certain London hospitals.
Eversfield Chest Hospital, St. Leonards, £50.
Fairlight Sanatorium, Hastings, £100.
Kelling Sanatorium, Holt, Norfolk, £740, of which £690 in consideration of the reservation of six beds during 1920 for the use of certain London hospitals.
Mount Vernon Hospital, Northwood, £150.
National Association for the Establishment and Maintenance of Sanatoria for Workers, Benenden, Kent, £3610, of which £750 in reduction of mortgage debt and £2760 in consideration of the reservation of 24 beds during 1920 for the use of certain London hospitals.
Northamptonshire Sanatorium, Creaton, Northants, £1530, of which £1380 in consideration of the reservation of 12 beds during 1920 for the use of certain London hospitals.

B.—*Convalescent Homes.*

Beau Site Convalescent Home, Hastings, £75.
Brentwood Convalescent Home for London Children, Brentwood, £50.
Brooklands Home (Invalid Children's Aid Association), Worthing, £50.
Bushey and Bushey Heath Children's Convalescent Home, Bushey, £50.
Chelsea Hospital for Women, St. Leonards, £75, with a view to encouraging the admission without payment of patients direct from the hospital.
Children's Convalescent Home, Beaconsfield, £25.
Children's Cottage Hospital, Cold Ash, Newbury, £25, in consideration of convalescent cases.
Children's Home Hospital, Barnet, £25, in consideration of convalescent cases.
Convalescent Home for Poor Children, St. Leonards, £150.
Convalescent Police Seaside Home, Hove, £75.
E. G. Anderson Hospital (Home of Recovery), Barnet, £200.
East London Hospital for Children, Bognor, £150, of which £100 to reinstatement after use by military for non-hospital purposes.
Florence Emma Home (Invalid Children's Aid Association), Dover, £50.
Friendly Societies' Convalescent Homes, Dover and Herne Bay, £75.
Great Northern Central Hospital, Clacton, £100.
Great Northern Central Hospital, East Finchley, £100.
Highgate Convalescent Home for Children, Highgate, £50.
Home for Convalescent Children, Southsea, £50.
Jewish Convalescent Home (Children), Brighton, £75.
King's College Hospital, Hemel Hempstead, £150, the grant is made on condition that patients are admitted free direct from the hospital.
Metropolitan Convalescent Institution, Bexhill, £75.
Metropolitan Convalescent Institution (Children), Broadstairs, £75.
Metropolitan Convalescent Institution, Walton-on-Thames, £150.
Middlesex Hospital, Clacton-on-Sea, £50.
Miller Hospital Convalescent Home, Bexhill, £100.
National Hospital for the Paralysed and Epileptic, East Finchley, £150, with a view to facilitating the admission of patients without payment.
Paddington Green Children's Hospital, Slough, £125.
Poplar Hospital, Walton-on-Naze, £50.
Queen Charlotte's Lying-in Hospital, Kilburn, £75.
Queen's Hospital for Children, Bexhill, £100.
Royal Waterloo Hospital for Children and Women, Whippingham, £75.
St. Andrew's Convalescent Home, Folkestone, £100.
St. Andrew's Convalescent Hospital, Clewer, £25.
St. Luke's Home (Children), Woodley, Reading, £25, in consideration of convalescent cases.
St. Mary's Convalescent Home, Birchington, £50.
St. Mary's Home for Children, Broadstairs, £75, in consideration of convalescent cases.
St. Michael's, Westgate, £25.
Samaritan Free Hospital, Amersham, £55.
Sunshine Home, Hurstpierpoint, £25.
Surgical Home for Boys, Banstead, £25, in consideration of convalescent cases.
Tilford Convalescent Home for Children, Farnham, £50.
Victoria Home for Invalid Children, Margate, £25, in consideration of convalescent cases.
Victoria Hospital for Children, Broadstairs, £125.

The Report Adopted.

The PRINCE OF WALES, in moving the adoption of the reports and awards, read a letter from the King, in which his Majesty expressed his cordial approval of the grants this year being specially increased, and referred to the gift of £250,000 from the Red Cross Society and the Order of St. John, remarking that the fact that the Distribution Committee had been asked to undertake its apportionment was a testimony to public confidence in the Fund. The LORD MAYOR having seconded the motion it was adopted unanimously.

In referring to the arrangements of the Fund for next year his Royal Highness said that two distributions would be made, the ordinary distribution in the autumn and at another period of the year the distribution of the £250,000 from the Red Cross Society and the Order of St. John.

On the motion of Viscount SANDHURST a vote of thanks was accorded to the Prince of Wales, and the proceedings terminated.

ROYAL COMMISSION ON INCOME-TAX:
THE MEDICAL PROFESSION'S CASE.

THE fifth instalment of the evidence given before the Commission has now been published, and in it is found the report of the evidence of Dr. Haslip on behalf of the British Medical Association. Dr. Haslip made an excellent witness, stating things reasonably and without prolixity, and also without holding himself out as even a quasi-expert on Income-tax laws and regulations. The fact is that, when all is said and done, there are not many matters of importance which affect the medical profession, and it only, in the income-tax sphere. But there are such matters, and both for that reason, and generally, it was most fitting that there should be a representative medical practitioner in the witness chair.

Simplification of Forms and Instructions.

The first point which Dr. Haslip put forward was that the forms and instructions should be simplified, so that the ordinary practitioner may be able to deal with them with his own hand without employing an accountant or other expert. Indeed, the point was pressed further than externals, and was applied to the actual bases of taxation of different kinds of income. Dr. Haslip mentioned a number of these and, of course, it is the fact that the "statutory" or taxable income is, or may be, arrived at by summing up a number of items which, in turn, have all been ascertained on totally different footings. Thus it may be the summation of the following: (1) Ordinary professional practice, on the average of the three preceding years; (2) appointments, on the emoluments of the year of assessment, at least as regards the fixed portion; (3) fluctuating or casual profits of appointments, either on a three years' average or on last year's figures; (4) income from or value of houses, &c., not at the actual

rents, but at what is called the net Sch. A assessment; (5) land in occupation, sometimes at the annual rent or value, and sometimes at double that figure, according to circumstances; (6) income from general investment at the expected income of the year of assessment; (7) war loans received without deduction at the source, and bank interest received, on the amount of the preceding year; (8) income from colonial, Indian, and foreign "securities" (bonds, mortgages, &c.) at the amount of the year of assessment; (9) from colonial, Indian,, and foreign "possessions" (stocks, shares, rents) on the average of the three preceding years; but (10) if the "possessions" are of certain classes, such as shares in partnerships not controlled from this country, or interests in trust funds, then the income is to be returned on the average of the amount *brought home to this country* during the preceding three years. Of course it may be said—and it is true—that it is not often that one household has all these sources of income or anything like it. To which it may perhaps be added that if the doctor and his wife are so fortunate as to be entitled to so many sources of revenue they need not, and should not, grudge a few guineas yearly to a skilled adviser to conduct them through the maze. There is, we fear, no use attempting to deny that income-tax and super-tax are technical spheres. A physician or surgeon will no doubt hold that, even if that be so, they are on a much lower plane of professional activity than his own operations. So, perhaps, they are, but the technical difficulty remains. Our sympathies are with Dr. Haslip's aspirations, but our judgment is with Dr. Stamp, one of the most skilled, experienced, and broad-minded of official (or rather, now, ex-official) experts, when he said in evidence that to him it was pathetic to hear the cravings for simplicity when the field of operations embraces all the varieties and complications of modern social, financial, and industrial developments. The saying goes that he is a poor architect who cannot save his own fees. Every medical man knows the evil consequences which sometimes ensue on people's off-putting tendencies in calling in medical advice; he can lay the lesson to heart in the taxation sphere.

Suggested Abandonment of the Average Rule.

As regards the ordinary professional income, Dr. Haslip, speaking in a representative capacity, supported the abandonment of the average rule altogether, and taking the figures of the previous year instead. In this respect the medical profession is in accord with the great majority of witnesses, though there are dissents. The examination which followed on Dr. Haslip's statement in chief disclosed not a little misunderstanding. It was suggested that it may often be very difficult to know the amount of last year's income, for there is the disturbing element of fees earned but not yet got in. As to that Dr. Haslip gives interesting evidence: "I can speak very strongly from my own experience. What I do not receive within the first month, or two months, I would sell at a very large discount; I would take a very small amount for it." No doubt the time-limit here mentioned is intended to run from the date of sending in the note of professional services and not from the date of the attendances. It reminds one of the country monumental sculptor's remark that if he did not get his money for a tombstone within the first year after the death he had the utmost difficulty in ever seeing it at all. But, as matter of fact, this point about postponed recoveries and bad debts has not so serious a bearing, for in the case of the medical and other professions where the element of stock-in-trade does not operate, the Department freely, and as a matter of course, allows the taxpayer to elect between the two methods of making up his accounts. The one is the earnings method and the other is the cash method. The former attempts to include everything on both sides, earned and incurred, though not received or paid. The latter confines itself to cash receipts and payments only, but, of course, at the end there has to be a clearing up, and that may cause annoyance once in a way. In the course of Dr. Haslip's evidence it emerged "that in certain districts the average of money received has been accepted from doctors by surveyors of taxes. This may seem surprising, but, unless our information is wrong, it is not the exception but the rule. Of course, "average of money received" is not very accurate. What is really meant is simply that, to arrive at the three years' average, the accounts of the three preceding years are made up on a cash basis on both sides, incomings and outgoings. Needless to say, whatever method is adopted must be adhered to. Good reasons for taking the cash basis are: (1) in the opening years the fees earned might be fairly good yet after deducting outgoings, the "balance" of actual cash got in might make it rather a tight fit to maintain the establishment and pay out hard cash for tax on profits not realised; (2) ease of accounting; (3) safety; for thus there is never paid tax on an item only to find later that the item is bad.

The Allowance for Depreciation of "Plant and Machinery."

The medical profession's most distinctive income-tax claim is for an allowance for depreciation on "plant and machinery," meaning, in their case, as put forward by the British Medical Association, chiefly motor-cars and all the elaborate apparatus and machinery which are now required in doctors' laboratories and surgeries. It makes for clearness if we call this wear and tear, for depreciation is really a different matter. The present rule is that wear and tear allowances are given in trade cases only and not to any profession. What a doctor is entitled to in those respects are (1) running expenses, (2) repairs, (3) renewals. Take a car: The first cost is not allowed; neither is it to a trader. If the car is used for, say, six years, and the doctor then dies or retires, the car may sell (though no doubt present times are exceptional) for a trifle; no tax relief can be got for this loss. If, on the other hand, the doctor sells the car for £200 and buys another similar car for £800, the £600 difference is allowed as a professional expense, and it matters not, though the first car cost only £400 or £500, because cars were then cheaper. But if, owing to extended practice, the doctor buys a second car, no allowance; or if he sells No. 1 and buys a more powerful car at a correspondingly increased price, the part of the price corresponding to the extra power is additional capital, and to that extent there is no allowance; otherwise there is an allowance as in the £600 car above stated. The profession's claim is that there ought to be a wear and tear allowance the same as to a trader. This looks likely to be granted. Two arguments strongly support it. The first is the analogy of a druggist's motor delivery-van. The second is the fact that, if the doctor chooses to hire his car, the whole hire is passed as a professional expense, although it includes an allowance to the owner to compensate him for wear and tear; as, indeed, for that matter, so does every taxi or bus fare.

Suggestions Regarding Houses.

Various different suggestions are made regarding houses.

(1) That depreciation of leases should be allowed as a set-off. A doctor pays, say, £8000 for the remainder of the lease of a house in Harley-street, and the life of the lease is running out every year, yet there is no allowance for that wasting nature of the asset. We have no expectation that this will be altered; neither has Dr. Haslip, for he said "That is a point brought forward; I do not wish to press it." There are various answers. The question has wide ramifications of application far beyond the one profession. It is reasonable to assume that the tax element was allowed for in the price. Thus a change might result in double allowances for the same thing.

(2) That there should be a fuller allowance for the portion of the house devoted to professional purposes. But the allowance at present may be up to two-thirds, and we believe the maximum is usually passed.

(3) There is a suggestion that doctors are under a professional compulsitor to be "over-housed." The meaning is that a man finds it necessary to reside in a fashionable locality, and, even assuming that he uses for

strictly domestic purposes a full one-third of the house space, still that accommodation is of a kind, and represents an expense, which are necessitated solely by professional considerations, and therefore there ought to be a special allowance. The same argument would apply in far reaching directions; based on truth, it none the less will probably be judged as too remote.

Separate Assessment of Partners.

Dr. Haslip then moved on to an entirely different matter—namely, that in partnership cases each partner should be separately assessed. That used to be done, but it was stopped a good many years ago. Now the firm is assessed, though the total tax is almost always arrived at after giving effect to each partner's separate tax position. That involves consideration of his (and his wife's) private income, personal abatements, family allowances, life insurance, and different rates of tax. The result is to tell each partner, more or less nearly, what is the total household income of each of the other partners, matters with which, it is obvious, he has nothing to do. This sacrifices privacy, which is the keynote of the income-tax system. Not only so, but it makes it by no means an easy matter to apportion the tax burden properly between the partners, and to press a matter of this kind is rather delicate. We have no doubt whatever that very often the tax is paid out of the firm's funds and borne by the partners in quite wrong shares under the present rule of joint charge.

The Tax Allowance for Children.

Dr. Haslip closed with an adoption of the proposals of the Board of Education with reference to the extent of the tax allowances for children. It is enough to say that these are on a very advanced scale as compared with the present figure (present maximum for any one child £40), though we do not say that the proposals exceed the actual cost of maintenance and education in the professional classes. To allow differentiation in the tax relief "values" of wives and children, according to the financial position of the household, would be a novelty in this country, and there is on the Royal Commission itself evidence of labour opposition to the idea.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Medical Guild: Discussion on State Medical Service.

AT the annual meeting of the Medical Guild held in Edinburgh a discussion took place on the question of State Medical Service. In opening the discussion the chairman, Dr. John Playfair (Edinburgh), said that whether they liked it or not they would, there was little doubt, in the near future be faced with a State Medical Service. The Guild was quite ready to accept such a service if it were to be limited to the necessitous classes only, and, indeed, they would favour such a proposal. They feared, however, that the service proposed by the Government might be of much wider scope, and might ultimately embrace the whole community, including hospitals and all other institutions connected with the health of the community. This would tend to reduce all professional activities to a dead level, and would entirely abolish friendly feeling and sympathy between doctor and patient, and lead to inefficient medical attendance. It would emphasise and increase all the weaknesses and faults of the National Insurance Act.

Professor W. Russell (Edinburgh) said at present it was proposed to bring all persons with salaries up to £250 a year into the State Insurance Service. The heads of departments were striving for more power and authority, and to be the autocrats over a servile profession. Except in the cases of the necessitous, or of a particular disease, the State had no right to interfere with the relations between man and man. The new proposal had grown out of the Insurance Act, which was regarded, especially in Scotland, as a failure. The Act was a political bribe to the manual labour section of the community, and had resulted in breaking in two the medical profession. The question was one not only for the profession, but also for the general community. The Guild stood for freedom of relations between the public and the medical profession; nobody should be forced into the acceptance of such a service, but it should be open to those who wished to use it.

Dr. E. Duncan (Glasgow) said he had grave suspicions of the intention of the Government in the immediate future, and that great dangers were ahead. During the last 50 years there had been various forms of government, and we had now arrived at what was supposed to be pure democracy. Such periods invariably ended in tyranny, and now a tyranny was established in which heads of departments were doing as they liked independent of the Government and of public opinion. At present these heads were chosen from political superiors, and it did not matter whether they were competent or not. It was time the medical profession insisted on having its rights conserved, and resisted a service which would divorce the practitioner from his patient. The present system of medical practice was much more to the advantage of the public than any described by advocates of a State service.

Other speakers emphasised the importance of organisation of the profession, and the education of students and of the general public in the question.

Dr. F. Porter (Edinburgh) said he understood that the sweeping aside of the National Insurance Act was under consideration, and on his proposal a motion was carried that they should urge for the abolition of the Medical Benefit Section of the Act, but retention of the Sick Benefit Section, and doubling of the amounts paid under it.

University of Edinburgh: The New Professorship of Psychiatry.

The foundation of the new chair of psychiatry having been approved by Order of his Majesty in Council, the University Court appointed Dr. George Matthew Robertson to be the first professor of psychiatry in the University of Edinburgh. The teaching of mental diseases in the Edinburgh school was first commenced by Sir Thomas Clouston. His class, although not compulsory, was very largely attended, and some time later he was appointed lecturer on mental diseases by the University, which subject then became part of the recognised curriculum. Dr. Robertson succeeded Sir Thomas Clouston as University lecturer. The new professor graduated M.B., C.M. at Edinburgh in 1885, and later held the appointments of medical superintendent of Perth District Asylum, Murthly, and Stirling District Asylum, Larbert. More recently he was physician-superintendent of the Royal Edinburgh Asylum, Morningside, and previous to his appointment as University lecturer was lecturer on mental diseases in the school of medicine of the Royal Colleges, and in the Medical School for Women. Dr. Robertson is a Fellow of the Royal College of Physicians of Edinburgh, and delivered the Morison lectures in 1911 and 1913.

University of Glasgow: New Lectureship.

At the meeting of Glasgow University Court held on Dec. 11th it was intimated that Dr. James S. Nicoll had forwarded a gift of £5000 to the University on behalf of two donors who wished to remain anonymous. The gift was for the purpose of establishing a lectureship in electrical diagnosis and therapeutics in the University in connexion with the Western Infirmary.

Glasgow Memorial to Sir William Ramsay.

On Dec. 10th in Glasgow University there was unveiled a bronze plaque, with portrait and inscription, to the memory of Sir William Ramsay. Professor J. Henderson in offering, and Sir Donald MacAlister in accepting, the memorial paid tribute to the work and attainments of Sir William Ramsay, one of the most brilliant students of Glasgow University. The medallion is the joint work of Sir J. Burnet and Mr. G. H. Paulin. Lady Ramsay was amongst those present at the unveiling ceremony.

Dec. 29th, 1919.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Treatment of Discharged Disabled Sailors and Soldiers.

SOME 15 months ago the Irish Insurance Commission, acting as agent for the Ministry of Pensions, made arrangements with the general practitioners of Ireland for the treatment of discharged disabled sailors and soldiers. The basis of remuneration was a capitation rate of 12*s.* 6*d.* for each disabled man. As neither the Ministry of Pensions nor any other authority had available any accurate record of the number of disabled men in Ireland, the capitation rate may always have been less than it should have been. In many districts it is probable that only the disabled men actually in need of medical treatment were recorded. The capitation rate was, as applying to a class of disabled men among whom the incidence of sickness was likely to be high, something more than the rate for medical benefits as yet paid to panel doctors in Great Britain. The latter rate is now being substantially raised, and the profession in Ireland is naturally discontented that so far there has been no movement to increase their remuneration.

The Royal College of Surgeons in Ireland.

At a recent meeting of the Council of the Royal College of Surgeons, Major-General R. H. S. Sawyer was coöpted a member of Council in room of the late Mr. R. D. Purefoy. General Sawyer retired from the Army Medical Service at the end of 1917, after a distinguished career. The last appointment he held was that of D.D.M.S. at Boulogne. He has since resided in Dublin. Interest is already being taken in the election of a vice-president of the College, which is to be held next June. Two candidates are in the field—Mr. R. C. B. Maunsell and Sir W. I. de C. Wheeler. Both are surgeons to Mercer's Hospital, Dublin.

The late Surgeon-General James Gaussen MacNeece.

The recent sudden death of James Gaussen MacNeece, C.B., retired Surgeon-General of the Army Medical Service, removes an Irishman of note. Born in 1856, he was the eldest son of the late Rev. James MacNeece, M.A., Rector of Clonfeacle, Moy, co. Tyrone. Educated at the Royal School, Dungannon, he gained his medical knowledge in Dublin, where he became L.R.C.P. & S.I. in 1877. In 1878 he entered the Royal Army Medical Service, and saw active service in various expeditions. He served in the South African War, was mentioned in despatches, and gained the C.B. At the beginning of the late war he was appointed Deputy Director of Medical Services, Control Board, and was transferred afterwards to India as Director of Medical Services in that country. He was subsequently invalided home, but never completely regained health or strength from his illness.

Dec. 29th, 1919.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Canadian Red Cross in France.

BEFORE finally leaving France for Canada the Canadian Red Cross Society held a farewell banquet at which the extent of its generosity to France was for the first time fully disclosed. Canada has given two million francs to the French Red Cross and similar charities, over and above the 300,000 francs sent to the President of the Republic in aid of refugees, and numerous presents in kind. The two hospitals near Paris financed by Canada, one at Joinville-le-pont and the other in the hippodrome at St. Cloud, were among the best equipped in the district, and the eight Canadian motor ambulances were at the disposal not only of the wounded but also of women, children, and old people in the invaded areas. During the war Canada has given France upwards of 30 million francs.

The Prevention of Desertion.

Dr. Box, of Tours, has recently given an account of the work done in the creche at Tours, where many infants abandoned by their mothers are housed. Late in 1916 the Prefect of the Department decided that all women delivered in the maternity hospital should remain in the creche wards for three months at least, with free board and lodging, under the sole condition that they nurse their babies. Moreover, they receive a grant of 1.50 fr. a day for so doing. The local authority pays the hospital charges, amounting to some 2 fr. a day. During the period from Jan. 1st, 1917, to Sept. 1st, 1918, 271 women (32 married, 239 unmarried) passed through the lying-in hospital. Of the 271 babies only 4 died; 51 were abandoned to the care of others by their mothers; but in no case was any child sent away from its mother if it had been with her in the home for more than 10 days. If this method were generally adopted in maternity homes infantile mortality would be materially reduced.

Specific Treatment of Vincent's Angina.

Dr. Capitan, employed in a military hospital, has had many cases of angina under his care. All were examined bacteriologically, and he separated those cases showing both spirilla and fusiform bacilli, the so-called Vincent's angina, and subjected them to a specific treatment. From August 2nd, 1914, to June 1st, 1919, 212 such cases occurred. The treatment consisted in the hypodermic injection of a solution of colloidal arsenic prepared by the director of the hospital laboratory. A single injection of 6 c.cm. into the buttock was sufficient to meet the condition, without any local treatment other than boric or peroxide gargles. In 48 hours the ulcers are free from organisms, and a few days after they are completely healed. This procedure gives better results than local treatment with arsenobenzol.

Open-air Schools.

In 1918, during the bombardment of Paris, school children were evacuated and sent to schools in the country. Near Chartres an open-air school was improvised with excellent results. After four months the average weight of the children had increased by 3 kilos, and the chest measurement of about 20 of them was larger by 8 to 10 cm. MM. Armand Delille and Ph. Waples have just issued a pamphlet advocating the universal adoption of these schools as prophylaxis against tuberculosis. M. Delille was strengthened in his views by his experience during the war in the examination at the frontier of women and children who had lived in the invaded territory and were being repatriated from Germany through Switzerland. Impressed by the results obtained by M. Rollier at Leysin with sun cures, he decided to treat on similar lines evacuated women and children who showed definite signs of tuberculosis. He suggests in his pamphlet that the healthy children of tuberculous parents, in addition to actually tuberculous but non-infectious children, should be sent into the country to live in healthy peasant families. If in spite of the change the lesions do not improve the children should then be sent to a sanatorium school under medical superintendence.

Dec. 26th, 1919.

The Services.

TEMPORARY COMMISSIONS IN THE INDIAN MEDICAL SERVICE.

THE Secretary of State for India announces that fully qualified European medical practitioners are required for temporary service with Indian troops on special rates of pay. Applicants must be British subjects of European descent and should not be more than 35 years of age. If accepted for appointment they will be required to enter into a contract to serve for two years. The rates of pay will be Rs.700 per mensem for a lieutenant, Rs.750 per mensem for a captain. Three or more years' service as a medical officer in the Home, Colonial, or Indian Forces is necessary to qualify a candidate for the higher rate. Officers will be provided with free passages both ways. Wives and families will be sent out at Government expense in the autumn of 1920, provided that shipping is available. An outfit allowance of £50 will be granted,

except in the case of officers who have served under the War Office or the Government of India, to whom £20 only will be issued. Further particulars and forms of application may be obtained from the Secretary, Military Department, Room 157, India Office, Whitehall, S.W.1. Envelopes should be clearly marked in the top left-hand corner "Temporary I.M.S."

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. S. G. Butler, D.S.O., relinquishes the acting rank of Colonel on ceasing to be specially employed.

Major F. Casement, D.S.O., relinquishes the acting rank of Lieutenant-Colonel on ceasing to command a Medical Unit.

Major M. F. Grant relinquishes the acting rank of Lieutenant-Colonel.

Temp. Capt. R. McRae relinquishes the acting rank of Major.

Capt. J. C. Denvir, from T.F., to be Captain.

Capt. A. Watson, D.S.O., is seconded for service with the Egyptian Army.

Capt. E. C. Linton, from Spec. Res., to be Captain.

D. C. Smelzer to be temporary Captain.

Officers relinquishing their commissions: Temp. Major E.P.G. Causton (and retains the rank of Major). Temp. Capts. granted the rank of Major: J. S. Lloyd, V. H. Mason, M.C., G. B. Warburton. Temporary Captains retaining the rank of Captain: F. J. McCarthy, T. Readman, S. P. Pollard, L. G. Reynolds, S. Potter, W. E. Cooke, D. B. Spence, H. V. Swindale, R. L. Jones, A. G. Morris, A. F. Fraser, W. J. D. Smyth, C. C. Twort, A. R. Gunn, W. G. Gordon, J. Hewat, C. H. Philips, H. W. Garden, T. G. Evans, T. T. B. Watson, V. R. Hirsch, G. W. Beresford, J. W. Potter, V. C. W. Vickers, G. H. Sinclair, A. Murdoch, A. E. Ainscow, R. S. Morshead, M.C., W. W. Stacey, J. Dickson, M.C., T. L. Jones, R. Adam, R. K. Robertson, H. L. Attwater, J. M. Sheridan, W. Niccol, E. H. Good, V. C. James, L. G. Jacob, F. G. Beatty, V. Wallace, C. St. A. Vivian, S. G. Gordon, A. Bremner, E. J. Selby, C. W. Aikman, J. M. MacKay, M.C., T. Jones, D. Bird, C. Sherris, E. J. Stuckey, A. V. Ledger, C. Murray, R. Jamison, W. Robertson, J. N. G. Nolan, I. Hodgkinson, J. A. Thom, W. C. Stevenson (on ceasing to serve with the Home Hospitals Reserve), J. W. Brown, H. D. Matthews, H. M. Godfrey. Temp. Lieut. J. Black (and retains the rank of Lieutenant).

Lieut. (temp. Capt.) G. E. Spicer, M.C., resigns his commission.

SPECIAL RESERVE OF OFFICERS.

Capt. M. D. Vint relinquishes his commission and retains the rank of Captain.

TERRITORIAL FORCE.

General List.—Capt. (acting Major) F. Scroggie, M.C., relinquishes the acting rank of Major on ceasing to be specially employed.

Capt. W.C.D. Hills relinquishes his commission and retains the rank of Captain.

1st Southern General Hospital: Capt. J. W. Stretton is restored to the establishment.

1st Western General Hospital: Capt. (acting Major) C. T. Holland relinquishes the acting rank of Major on ceasing to be specially employed.

TERRITORIAL FORCE RESERVE.

Lieut.-Col. H. Davy, K.B.E., C.B., from 4th Southern General Hospital, to be Colonel.

ROYAL AIR FORCE.

Major E. C. Clements (R.A.M.C., T.F.) is granted a temporary commission as Major on seconding to the R.A.F.

The undermentioned are transferred to the unemployed list: Capts. C. J. Miner, P. C. Parr, A. Kirkhope; Lieut. W. J. S. Cameron.

Flying Officers to be Flight Lieutenants: T. J. X. Canton, P. McDiarmid.

AUXILIARY ROYAL ARMY MEDICAL CORPS FUNDS.

The usual quarterly committee meeting was held on Dec. 19th at 11, Chandos-street, Cavendish-square, W. Three grants were made in the benevolent branch for officers amounting to £290, and 14 grants in the relief branch for the rank and file amounting to £624. These funds are for the relief of widows and orphans of commissioned officers and non-commissioned officers and men of the rank and file of the Royal Army Medical Corps, Special Reserve, Territorial Force, and New Armies, and also for the relief of the children of those who have been so severely damaged in the present war that they need help for the education of children. Requests for relief should be addressed to the honorary secretary at the offices of the funds at 11, Chandos-street, Cavendish-square, W.1.

URBAN VITAL STATISTICS.

(Week ended Dec. 20th, 1919.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had been 13·8, 14·4, and 13·9 in the three preceding weeks, rose to 14·6 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual death-rate was 15·3, or 1·9 per 1000 above that recorded in the previous week, while among the remaining towns the rates ranged from 6·1 in Swindon, 7·2 in Southampton, and 7·6 in Warrington, to 20·5 in Hastings, 22·8 in Sunderland, and 23·0 in Dewsbury. The principal epidemic diseases caused 297 deaths, which corresponded to an annual rate of 0·9 per 1000, and comprised 88 from measles, 78 from diphtheria, 51 from infantile diarrhœa, 39 from whooping-cough, 35 from scarlet fever, and 6 from enteric fever. Measles caused a death-rate of 1·7 in Burnley and in Darlington, 2·4 in Preston, 2·7 in Barrow-in-Furness, and 3·3 in Barnsley; and diphtheria of 1·2 in Plymouth. The 64 deaths from influenza were 17 below the number recorded in the previous week, and included 18 in London, 4 in Leicester, and 3 each in Manchester and Salford. There were 2942 cases of scarlet fever and 1822 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 2947 and 1796 respectively at the end of the previous week. The causes of 35 deaths in the 96 towns were uncertified, and included 6 in Liverpool, 5 in London, and 3 each in Birmingham and Sunderland.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had been 15·0, 15·3, and 13·5 in the three preceding weeks, fell to 13·2 per 1000. The 281 deaths in Glasgow corresponded to an annual rate of 13·1 per 1000, and included 6 from infantile diarrhœa, 5 from diphtheria, 3 from measles, and 2 from scarlet fever. The 86 deaths in Edinburgh were equal to a rate of 13·3 per 1000, and included 3 from diphtheria, and 1 each from measles and scarlet fever.

Irish Towns.—The 133 deaths in Dublin corresponded to an annual rate of 17·1, or 1·8 per 1000 below that recorded in the previous week, and included 1 each from whooping-cough, diphtheria, and infantile diarrhœa. The 185 deaths in Belfast were equal to a rate of 24·1 per 1000, and included 32 from measles, 4 from scarlet fever, and 1 each from enteric fever and diphtheria.

(Week ended Dec. 27th, 1919.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had been 14·4, 13·9, and 14·6 in the three preceding weeks, fell to 12·0 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual death-rate was 10·6, or 4·7 per 1000 below that recorded in the previous week, while among the remaining towns the rates ranged from 3·5 in Eastbourne, 4·9 in Ilford, and 6·2 in Smethwick, to 20·1 in St. Helens, 20·7 in Barnsley, and 26·1 in West Hartlepool. The principal epidemic diseases caused 275 deaths, which corresponded to an annual rate of 0·9 per 1000, and comprised 87 from measles, 82 from diphtheria, 41 from infantile diarrhœa, 40 from whooping-cough, 22 from scarlet fever, and 3 from enteric fever. Measles caused a death-rate of 1·8 in Sunderland, 2·0 in Dewsbury, 2·2 in Burnley, 2·9 in Preston, and 3·3 in Barnsley; scarlet fever of 1·2 in Cardiff; and diphtheria of 2·0 in Willesden. The 43 deaths from influenza were 21 below the number registered in the previous week, and included 12 in London and 3 each in Stoke-on-Trent and Hull. There were 2873 cases of scarlet fever and 1862 of diphtheria under treatment in the Metropolitan Asylums Hospitals and in the London Fever Hospital, against 2942 and 1822 respectively at the end of the previous week. The causes of 30 deaths in the 96 towns were uncertified, and included 3 each in London, Birmingham, Liverpool, and Blackpool.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had been 15·3, 13·5, and 13·2 in the three preceding weeks, rose to 14·8 per 1000. The 316 deaths in Glasgow corresponded to an annual rate of 14·7 per 1000, and included 3 each from measles, diphtheria, and infantile diarrhœa, and 1 from scarlet fever. The 90 deaths in Edinburgh were equal to a rate of 13·9 per 1000, and included 3 each from measles and diphtheria and 1 from scarlet fever.

Irish Towns.—The 92 deaths in Dublin corresponded to an annual rate of 11·8, or 5·3 per 1000 below that recorded in the previous week, and included 2 each from scarlet fever, whooping-cough, and infantile diarrhœa. The 156 deaths in Belfast were equal to a rate of 20·3 per 1000, and included 19 from measles, 3 from scarlet fever, 2 each from diphtheria and infantile diarrhœa, and 1 from whooping-cough.

Obituary.

SIR WILLIAM OSLER, BART., M.D., F.R.S.,

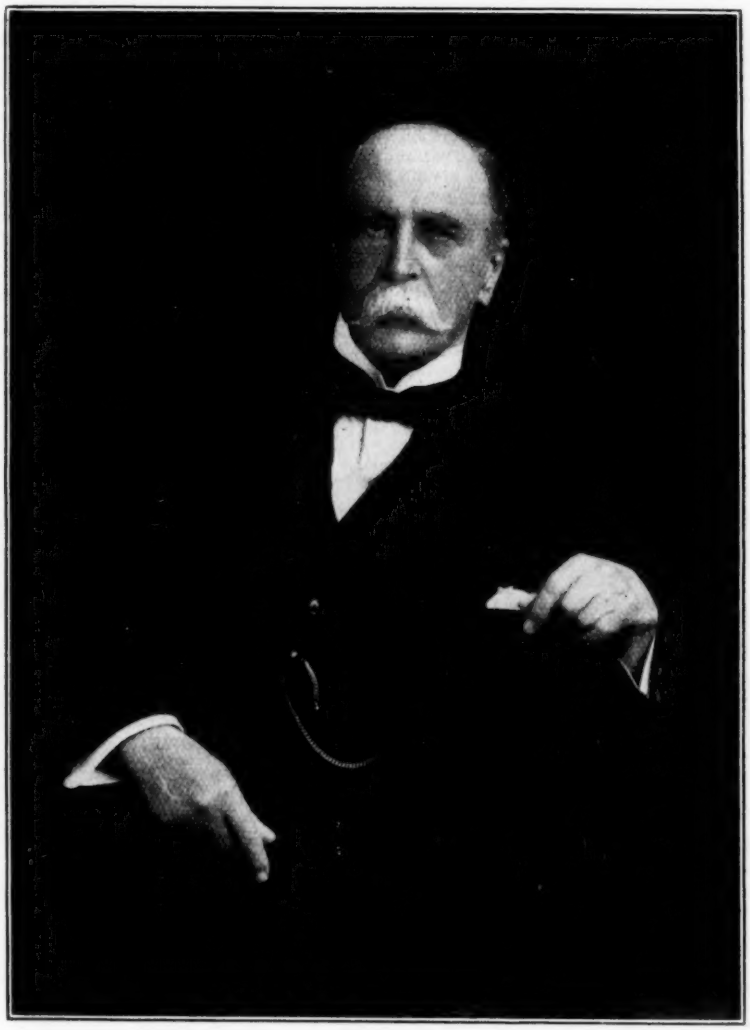
REGIUS PROFESSOR OF MEDICINE, UNIVERSITY OF OXFORD.

WE deeply regret to announce the death of Sir William Osler, Regius Professor of Medicine in the University of Oxford, which occurred on Dec. 29th at his residence, Norham Gardens, Oxford. This sad issue to a long illness had more than once been feared, as bronchitis and pneumonia of an ill-defined type, ensuing upon a chill received three months ago, refused obstinately to clear up. On the other hand, the courage and vitality of the patient, who remained young at the age of 70, flattered his advisers into hope for ultimate recovery. An operation for empyema, performed just before Christmas, promised favourable results, and for a time encouraging reports were issued. The end, however, came suddenly on Monday afternoon.

Sir William Osler was born at Bondhead, Ontario, in 1849, being the sixth son of the Rev. Featherston Osler, a Cornish clergyman who went to Canada as a missionary. The Rev. F. Osler married Miss Ellen Pickford, and their family formed a distinguished group, for two of Sir William Osler's brothers were famous lawyers, one being a judge, while another brother, Sir Edmund Osler, the President of the Dominion Bank of Canada, is a well-known financier. The mother of these sons died quite recently, a centenarian. William Osler was educated at Trinity College School and the University of Toronto, where he began his medical studies. He proceeded thence to the McGill University, Montreal, and graduated M.D. in 1872. Thence he came to London and entered at University College, where he took the Membership of the Royal College of Physicians of London, proceeding immediately to study pathology in the famous schools of Berlin, Vienna, and Leipsic. In 1874 he returned to McGill University and was elected Professor of the Institutes of Medicine, which post he held for ten years, laying thus the foundation of his reputation as clinical teacher and educational authority, and bringing to his work a scientific equipment possessed by but few of his contemporaries. Elected a Fellow of the Royal College of Physicians of London in 1884, he was appointed to deliver the Goulstonian lectures, and in dealing with the subject of malignant endocarditis he became known at once in this country as a great pathologist and clinician. These lectures, which were published in THE LANCET in March, 1885, were, in fact, a revelation of the man. The clinical studies were based on personal experience and the theories were fortified by a wide consultation of the best German, French, and English authorities. The moment the lectures appeared it was obvious that the McGill University possessed a pioneer in our science and art, and it was with great regret that Canada learned that he had accepted the invitation of the University of Pennsylvania to proceed to Philadelphia as professor of clinical medicine. This post he held for five years, and while he added to his academic reputation he also obtained a very large consulting practice.

In the United States a third opportunity now arrived, and one which was to bear still greater fruit. In 1889 he was offered the professorship of medicine at the Johns Hopkins University, Baltimore, a post which he held for 15 years, and here his conduct of the duties laid down a remarkable pattern for university medical education. The ideal at which he aimed, and which he partly carried out at Baltimore, was described many years later by himself when giving evidence before the Royal Commission on University Education in London, presided over by Lord Haldane. Before this Commission Osler pointed out that clinical medicine should and could come directly within the sphere of university training, placing medicine alongside the other great faculties, if certain hospitals were adapted to meet the demands of the scientific study of disease and the scientific training of students. He described to the Commission an ideal hospital unit, showing at the same time that such organisation would place medicine on the footing of other university schools. The unit, according to his description, comprised a professor or director having control of 60 beds and being in touch with laboratories for special research along the obvious lines of physics and physiology, bacteriology and vaccine therapy, chemistry, microscopy, and radiology. While allowing that the hospitals should have a free hand as to details, he made a point that the English system of dressers and clinical clerks should be preserved, as it was proved to have led to training of a more practical sort than could otherwise be obtained. At the Johns Hopkins University he introduced his ideas with perfect success, and to a large extent the new developments in connexion with certain of the great London hospitals are founded on the work done by Sir William Osler at Baltimore. From Baltimore, also, in 1892, there came that most popular treatise on medicine, Osler's "Principles and Practice." This book was recognised at once as a distinct acquisition to medical literature. There were at the time several books, notably those of Taylor, just issued, Roberts, and Fagge, edited by Pye-Smith, which covered the range of medical study to the satisfaction of students and of their examiners, but Osler's treatise appeared at a time when not only did modern developments require recording, but when a new spirit of approach was badly needed in response to altering central conceptions concerning disease. The observation, lucidity, and powers of arrangement, already displayed in the Goulstonian lectures, found full vent in this work. The author contrived to give the lessons to be learned from the latest pathological investigations in combination with admirable accounts of personal clinical observations, while he boldly accepted new theories of disease and new classifications in accordance with the progress of our knowledge. For the first time the student learned the real nature of pneumonia and tuberculosis, and for the first time many practitioners became aware of the real bearing on medicine exercised by modern bacteriological work. In the meantime, from the University School at Johns Hopkins there came a steady output of useful clinical discovery. Osler developed the scientific teaching of internal medicine, and did special personal work in relation to erythema multiforme, chorea, multiple telangiectasis, and polycythæmia, while at his clinic the valuable studies of W. S. Thayer and W. G. MacCallum were conducted into malarial fever, as well as the investigation of amœbic dysentery by Councilman and Lafleur, and other research work which has now found its way into the common stock of knowledge. Osler's work was justified alike by his personal share in its growth, which was rewarded by election to the Royal Society, by his encouragement of coöperators with learning and sympathy, and by the effectiveness of the educational machinery which he had devised.

In 1905 Osler, widely known on the continent of Europe, as well as throughout North America, as a consulting physician, accepted the call of the University of Oxford to the chair of the Regius Professorship of Medicine. His fame was at its zenith, and his departure from America was the signal for an extraordinary outburst of affectionate regret from the medical profession of the western world. Canadian born and of Cornish stock, with his learning reinforced at various European centres, he was a true cosmopolitan, but America viewed his transference to Oxford as the loss of one who adorned its civilisation. He was just 55 years of age, and a better man to succeed Sir Henry Acland and Sir John Burdon-Sanderson could not possibly have been found. He was a scientific student and teacher of acknowledged rank, and he had an enormous acquaintance with men and things, great practical experience in education, and definite ideals whose working success had been proved. And those ideals were exactly in connexion with the position which a faculty of medicine ought to enjoy if it were to take its stand in university training with the other great faculties. He found at Oxford a final opportunity. By his position as physician to the Radcliffe Infirmary he enjoyed the facilities for combining clinical practice with scientific research and academic exposition. His students were men fitted by preliminary education to get value from his teaching,



WILLIAM OSLER

From a photograph by Messrs. Elliott & Fry, Ltd.

and he made the medical school at Oxford a living force. He kept the Oxford medical graduates in touch with their University in a way that had not hitherto been attempted, and he used his personal qualities and his open-handed hospitality to further the scientific interest of the University and its medical school. Never was professor less professorial, never was don less donnish; yet never did the ancient University of Oxford summon to her side a man more appreciative of all that a great university stands for.

One of his eminent colleagues at the University thus writes of Osler's Oxford life: "After the strenuous hustle of American life the rest and calm of Oxford appealed to Osler, and it is good to know that the years spent here were amongst the happiest of his life. The surroundings were such as he delighted in, the society was congenial, and the duties of his office, not overburdensome, were such as to give him ample scope for his activities and free play for his broad outlook on life. Gifted with a remarkable memory and equipped with an almost limitless experience, he never seemed to forget anything he had either seen or read. He had a marvellous power of marshalling facts and getting at their essentials. Quick to realise the ever-changing needs of the times and always in the front of progress, there was a brightness and sparkle about his views which disarmed opposition. At a meeting, whenever Osler was in the chair, the proceedings were never dull, and business was usually expeditiously transacted. He had clear views as to what he wanted, and generally got his way, for his way was usually the best. Of a nature most generous and kind, he was ever mindful of the trials and sorrows of others. Many will there be who remember with affection the comforting words with which he soothed their sorely tried hearts. To those engaged in the struggle of life he was full of encouragement, wise counsel, and often substantial aid. Even of the failures in life he had always something good to say. With qualities such as these it cannot be wondered that he endeared himself to all, and we in Oxford will cherish the memory of his sympathetic personality.

His delight was in books; he was never happier than when showing you some recently acquired treasure. Much of his leisure was spent in the Bodleian, of which he was a curator, and his expert advice was of invaluable service to the delegates of the Clarendon Press. By virtue of his office he was master of the quaint old almshouses at Ewelme. Nothing gave him greater pleasure than to whisk off by motor-car a party of American visitors—there, possibly, for the first time—to introduce them to the beauties of this most picturesque of English villages; it remains as a lasting memory to many who were privileged to make the visit.

Of his work in the medical school, what can be said that is not known? He cheered us by his breezy presence and left us all the heartier with some quaint quip or jest. None the less, he was alert and observant, and oftentimes we benefited by some shrewd remark or friendly criticism.

It was around the Radcliffe Infirmary that his activities mainly centred; he was largely instrumental in getting the new clinical laboratory built there, and much of his time was devoted to the introduction of appropriate clinics in that institution. Like many others, Osler lost his only son, and the blow hit him hard, but he never winced. He said to me: 'Ours is a common sorrow; we must think of others as well as ourselves.' In consequence he immersed himself in duties innumerable, particularly in connexion with the hospitals under Canadian and American control. He was always responsive to the appeal of friends from abroad who were anxious to obtain news of their wounded sons. This often entailed long and tedious journeys, and the strain told on him. He was a worn and tired man.

When peace came, bringing with it the brighter outlook, a holiday in the Channel Islands appeared to have restored to him all the old vitality—under the genial influence of the Jersey climate, with boyish glee he had been turning cart-wheels on the sands at 70 years of age. We all hoped that 'our Regius' had still many years of active life before him. Called in consultation to Glasgow he was caught by the railway strike; he managed to travel as far south as Newcastle, and there he was held up. Anxious to get home he undertook the long motor journey to Oxford. He arrived a sick man, and despite the care and devotion of those who attended him so lovingly and long he passed away with the fading light of the afternoon of Dec. 29th."

The war made of Sir William Osler a link between the medicine of America and Canada and that of the Allies. His presidency of the Fellowship of Medicine was inevitable when the purposes of that organisation became defined, for that in medicine we have the strongest bond between nations, now an obvious proposition, was always to him a creed. As his Oxford colleague has said above, he worked heart and soul for the sick and wounded in the great struggle. His counsel and his purse were ever open to those who needed them—any need of any sort appeared to constitute a claim which was sure to be honoured—and his Oxford home, like the guest-room at the Athenæum, with him as host, became a centre of frequent and wide reunion. He enjoyed bringing men together, and not only did his guests feel a personal regard for their host, but his lovable example compelled them to think well of each other.

We need not enumerate in detail either the books which Sir William Osler wrote, or the academic distinctions which he enjoyed. Probably no man ever had the right to wear so many hoods. An Honorary Doctor of Science in five British universities, he was an LL.D. seven times over, while Berlin, Vienna, and Christiania added to the long list of English, Irish, Scottish, Canadian, and American degrees. He was created a baronet in 1911. His published work includes, in addition to the "Principles and Practice of Medicine," lectures, monographs, and addresses on many clinical manifestations and affections, several volumes of essays, of which "Æquanimitas," published in 1904, is the best known, and many biographical studies, of which those on Linacre and Servetus are admirable examples of the intimate historic style. He was also, with Dr. Thomas McCrae, the editor of a well-known System of Medicine, in the production of which leading physicians in this country and the United States and Canada coöperated.

The medical profession has lost in Sir William Osler an acknowledged head; the east and west of the Anglo-Saxon worlds have been deprived of their firmest common friend; and the individuals who mourn him to-day stand in every class not only in this country and in America, but throughout our Dependencies and the Continent of Europe.

Sir William Osler married in 1892 Grace, the daughter of John Revere, who survives him, and by whom he had an only son who predeceased him. The sympathy of the world goes out to Lady Osler.

CHARLES LOUIS TAYLOR,

LATE ASSISTANT EDITOR OF THE "BRITISH MEDICAL JOURNAL."

Charles Louis Taylor, for many years on the staff of the *British Medical Journal*, and for 20 Assistant Editor, died after a long illness on Dec. 21st, in his seventy-first year. He was the only child of Dr. Charles Taylor, of Peterhead, Aberdeenshire, who died of cholera contracted in the course of duty, at the age of 24. The mother took her infant son to France, and when he was brought again to Scotland the child could speak only French. He entered Blair's College, Aberdeen, at the age of 11, and from there, at the age of 15, went to the Scots College, Valladolid, to be educated for the priesthood. Finding that he had no vocation, he thought of entering the Indian Civil Service, but when he applied he was over age. At about this time he lived a good deal in France and this upbringing made him a considerable linguist. He had colloquial French, Spanish, and Latin, a good knowledge of Portuguese and Italian, and afterwards taught himself to read German. He entered as a medical student at University College in 1873. Though he was punctual in his attendance throughout the full curriculum and eventually, as locum-tenent, held resident posts at University College Hospital, he could never be induced to sit for any examination. Thus, though he was well read in medicine and had had

considerable practical experience, he never qualified. In 1880 he became secretary to Sir Morell Mackenzie and assisted him in the preparation of the second volume, published in 1884, of his "Manual of Diseases of the Throat and Nose," of which the first volume had appeared in 1880. In the preface to the latter the author acknowledges his "deep obligation to Mr. C. Louis Taylor for his invaluable help." It was, no doubt, in reference to similar help rendered to other medical authors, so often anonymous and thus unrecognised, that he adopted for his book-plate the legend "Alas, poor ghost!"

In 1886 Taylor joined the editorial staff of the *British Medical Journal*. In 1897 he was appointed Assistant Editor, and to his duties in that capacity the remainder of his working life was wholly devoted. In the routine work of medical journalism he was accurate and painstaking almost to a fault. A misquotation or wrongly applied name really distressed him, and his own work was a model of accuracy and logical arrangement. The pleasure he found in his calling was in two directions. He was a skilful and effective controversialist, and loved nothing better than to quench an antivivisection or antivaccinist light with the cold douche of fact and common-sense. His real strength was in medical history, especially biography, in the study of which he found recreation as well as occupation. He edited the volumes published under the general title "Masters of Medicine," and made preparations to contribute a biography of Vesalius, but the series was discontinued. Most of his historical writing was published in the *British Medical Journal* without his signature, but his attainments became known to a few, and some years ago, at the instance of Sir William Osler, he was elected an honorary member of the Section of the History of Medicine of the Royal Society of Medicine. This recognition greatly pleased him, but public functions had no attraction for him. He was of a genial nature and his courteous manner quickly put a stranger at ease; he loved his work and his books, and his home life above all.

He enjoyed good general health until about seven years ago, when he had a serious illness. A successful operation by his old friend Mr. Bilton Pollard gave him a new lease of life, and he returned to work, fighting manfully against disabilities and failing energy, until his retirement in March, 1917. He married in 1882 and leaves a widow, two daughters, and a son, Dr. C. J. G. Taylor, of Nuneaton, who served throughout the war as surgeon, R.N. Reserve (Vol.).

CHARLES ROBERT WATSON, M.D. BRUX., M.R.C.S., L.R.C.P. LOND.,

SURGEON, TUNBRIDGE WELLS GENERAL HOSPITAL.

THE death of Dr. C. R. Watson, of Tunbridge Wells, occurred quietly in his sleep, the result of heart trouble, on Dec. 23rd, 1919. He was the elder son of Dr. George S. Watson, and the grandson of Dr. Trustram, both of whom had practised in Tunbridge Wells before him. Before beginning his medical education at St. George's Hospital he had been at Tonbridge School. At the hospital he was a keen clinical student, always in the wards, and always ready to discuss his cases. He held the offices of house surgeon, house physician, and obstetric assistant, and having qualified as M.R.C.S., L.R.C.P., afterwards took the M.D. degree at Brussels. Almost immediately he joined his father in the Tunbridge Wells practice, where his life work has been.

Dr. Watson's early death is a direct result of overwork during the war. In addition to double work in his practice—for his brother volunteered—and at hospital, he was surgeon to a large Red Cross hospital, a venereal clinic, a large Church of England Home, and convalescent homes for children and for officers: work which led to straining his strength very seriously. Few people realise the enormous amount of work which the civilian members of our profession have undertaken during the war. Much of this work was unremunerated and done for love of country, with determination to accept no reward or decoration. Such work was Charles Watson's.

Correspondence.

"Audi alteram partem."

THE ANTI-RELAPSE TREATMENT OF MALARIA.

To the Editor of THE LANCET.

SIR,—When Naaman the Syrian was advised to wash seven times in the Jordan in order to be recovered of his leprosy he was angry at the mere simplicity of the prescription, and apparently for the same reason many medical men still refuse to treat their cases with the very simple continuous quinine medication laid down by the malaria prophets in Israel. May I argue the case once more?

The first formula which we suggest or use at the large consultative Tropical Diseases Clinic, which was started by the Ministry of Pensions near Sloane-square on Oct. 1st last, is the following:—

To Messrs. ——
For Mr. ——

℞	Quininæ sulphatis...	gr. 80.
	Ac. sulph. dil.	q.s.
	Aquam	℥viii.

Solve. **Half a sherryglassful (2 tablespoonfuls or one-eighth of the bottleful) every day just before breakfast without fail. The bottle to be refilled once a week for more weeks.**

This solution (with pharmacological precautions, understood) is perhaps the most widely used medicine in the world, not excepting Dover's powder, and I quote the prescription merely to make the directions quite clear. Dr. Castellani reminds me that it is often called "coolies' mixture." It has been employed everywhere in warm countries since Pelletier and Caventou isolated quinine from cinchona bark in 1820.

We employ it as follows: (*a*) If at his first visit the patient complains of relapses within the last few days or weeks, or looks ill, or is a complicated case, or is apparently not to be trusted to take his medicine, we suggest or prescribe enough quinine for only one or two weeks, after which he must present himself again for examination (whether the parasites be found or not). But (*b*) if he appears to be trustworthy and not much "out of sorts," we tell him to return after four weeks, and we enter the word *three* before the two last words in the directions, so that he can get his medicine regularly from the chemist without troubling to see his doctor again in the meantime. In both cases, however, the patient is always told that if he does get a relapse in spite of the treatment he should take three doses (instead of one dose) a day just before meals for two days at least, and should see his doctor again as soon as possible.

Few such cases occur, and the patients are generally found to be much improved at the second visit. They are then given enough quinine for another month (the same prescription), after which they must report again. At this third visit they generally admit having remained quite free from relapses since the second visit, and look still better; but it is advisable to continue the medicine for yet another month if possible, making 9 to 12 weeks of 10 gr. of quinine daily. The men, who soon recognise the benefit of the daily dosage, are usually quite willing to continue it for this period. At the fourth visit I am now stopping the quinine, as a rule, or reducing it to 5 gr. a day for another month; but I explain to the patient that this may possibly involve a relapse, after which the whole treatment must be commenced again; and I request him to report immediately if such a relapse threatens. We have not yet had time to ascertain the final results, but I infer from 40 years' general experience that when once a case is restored to ordinary health and vigour his infection will either be cured, or he will possibly suffer only from an occasional relapse after long intervals of six months, or a year, or more. But this remains to be proved statistically. When I myself was infected during my malaria investigations in 1897, I took quinine precisely as prescribed above for four

months (except, of course, that I took larger doses at first), and I have never had a relapse.

As shown at the malaria concentration centres, relapses may not infrequently occur during the first two or three weeks of this daily dosage, or very rarely after longer periods; but the large majority of the men improve greatly under it in a month. If, therefore, a case fails to improve within a month, it is most probable either that he is not taking his medicine (for which we have a known test), or that he is suffering from something else than malaria.

We employ the sulphate for economical reasons. It agrees with the large majority of the cases. I am now taking the medicine myself in order to keep company with my patients, and I scarcely know afterwards whether I have had a dose or not. I prefer the dosage *just* before breakfast in consequence of large personal and general experience, partly because the first mouthful of the meal removes the taste, and partly because I think the drug is most effective when given at that time and in that manner. Several patients who complained that it made them sick were, I found, taking it half an hour or more before the meal—quite another matter. When it really does not agree (as with dyspeptics) I allow half the dose before an evening meal or substitute the hydrochloride.

The single dose before breakfast is more convenient for working men than two or three smaller doses during the day. A dose of 30 gr. twice a week would probably be as effective, though not more so, but the men would not take it. On first visits most of the men have been taking quinine only when they "get fever" in doses from 5 to 30 gr. and omitting it entirely between the relapses—for which reason the said relapses occur. The thing is to persuade them to take it daily. We employ several kinds of pleasant peaceful persuasion—and the great majority of our patients are good honest men who wish to get rid of their malaria, pension or no pension. Thus I point out to them that it is bad military tactics to shell their enemies, the "germs," only when these are attacking them during a relapse; we should go on shelling them after they have been driven back to their trenches in order to exterminate the lot before they can bring up reinforcements. Another pleasantry of mine is to say, "Please give my compliments to your wife and beg her to make you take your medicine every day *whether you like it or not!*" They appreciate the situation; the wife gets the message, and the patient comes back smiling a month later—a better man.

I doubt whether quinine is as certain in tablets as in solution. For a month or a fortnight after relapses 15 gr. daily are perhaps better than 10 gr., but the latter probably suffice for the remainder of the three months' course—as was found to be the case in the two divisions brought from Salonika to France in 1918 (see THE LANCET, 1919, i., 780, where I also summarised some of the results in two Malaria Concentration Centres). The 15 gr. daily treatment is advocated in the excellent recent paper (THE LANCET, ii., 1134) by Dr. Henry Fraser—who has had a very large experience in the malaria centre on Salisbury Plain and in two malaria hospitals, and who is now a member of our clinic. I doubt whether *less* than 10 gr. a day is sufficient, judging from Lieutenant-Colonel S. P. James's results at Epsom in 1917, and other work. We tried *no* quinine between the relapses in two hospitals in 1917, with very bad results. But perhaps the body weight and other characteristics of patients ought to be more considered with reference to dosage than it has been possible to consider them hitherto.

The parasites are always searched for in Dr. Broughton Alcock's laboratory at the first visits of patients, and at subsequent visits if no improvement is shown, or if the diagnosis is doubtful. A course of quinine is sometimes advised as a precaution, even though no signs of malaria may remain. A fortnight's rest may be enjoined after a serious relapse, but the patient should gradually return to full work as he improves—idleness is the worst thing possible in chronic malaria, in hospital or out of it. Tonics, fruit, stout, laxatives, &c., are to be employed at discretion.

What is the scientific basis for this class of treatment? It has been employed under various forms since cinchona was first introduced. In military practice in India before the war six weeks was the official duration. I have always advocated four months (see my "Prevention of Malaria," Murray, second edition, p. 142). "Two months from date of the last relapse" was ordered in the Provisional Instructions for the Treatment of Malaria (War Office, August, 1917). But the most striking example—in fact, I think the most brilliant piece of malaria work during the war—was the case, just referred to, of the two Salonika divisions in France. They arrived so "rotten with malaria" that they shed a third of their men in wayside hospitals between Marseilles and Dieppe, and 100 men or more were coming to hospital every morning out of each depleted battalion. In three months almost the entire two divisions (which had gathered up their men again) were in the front firing line in France!—a result due to the vigour and ability of Lieutenant-Colonel J. Dalrymple, C.M.G., O.B.E., acting under the orders of General Sir C. Burtchaell. As the result of this experience malaria concentration centres were formed in each command in the United Kingdom, but only one month's quinine course was (officially) given in these. Comparatively few of the men from these divisions and centres are now coming to us; and I wish that the whole War Office malaria organisation could have been retained for the use of the demobilised soldiers. It therefore now remains for civilian medical practitioners to apply the same method to these.

But can we not cure the cases outright by some *therapia magna sterilisans?* I wish we could. Unfortunately, though the War Office made innumerable experiments from early in 1917 onwards, no really satisfactory result was obtained. For details the reader should study the forthcoming War Office publication, Observations on Malaria, by Medical Officers of the Army and Others (Stationery Office), the Annals of Tropical Medicine and Parasitology (Liverpool) for the last two years, and many papers in THE LANCET and other journals. We tried intravenous and intramuscular injections, heroic doses, kharsivan, and almost everything we could think of. Not one treatment provided a certain cure; and the treatments which gave the most promising results required at least a month's stay in hospital and were, I think, almost more severe than the disease. We still live in hopes; but up to the present the daily dosage described above remains the best, as it is the oldest used. If I had malaria to-day I should not dream of allowing any other "cure" to be practised on me.

Much is being written just now on treatment, but most of it applies only to the treatment of relapses. As will be seen from the "Observations," almost any reasonable quinine therapy reduces the relapse in a day or two; but our present point is that relapses ought not to be allowed to occur at all. In the great majority of cases, if a relapse occurs we may be sure that the patient has not been taking his quinine, either in sufficient doses or sufficiently frequently, or both. I quite agree with Colonel James's remarks on this point (THE LANCET, Dec. 6th, 1919, p. 1017); and many of the numerous deaths he mentions were probably due to this fact. Yet surely enough has been published on the subject.

Are we, then, to continue this anti-relapse treatment for ever? I infer that the malaria infection tends to exhaust itself and to die out more and more rapidly after the first year. When I was at the War Office I estimated that from 100,000 to 150,000 men had become infected on the Eastern fronts, but James says (p. 1016, loc. cit.) that only 14,000 patients have been notified to the Ministry of Health since March 1st. This is only half the number of Y-scheme men alone (obstinate chronic malarias), which, to my certain knowledge, have been sent home from Salonika. What has happened to the remainder? Recovered, I hope. And I trust that most of the others, except perhaps a few "wanglers," will be off the books long before this time next year.

I am, Sir, yours faithfully,

Dec. 25th, 1919. RONALD ROSS.

THE DRAFT REGULATIONS FOR 1920.

To the Editor of THE LANCET.

SIR,—Dr. J. Pereira Gray's letter in your issue of Dec. 27th, 1919, reveals him as the obstinate twelfth juryman. To maintain this attitude it is necessary either to pervert the facts or to attribute to other minds the psychological imperfections of one's own. Dr. Gray does both. By what appears to be the general opinion of those present the recent Conference of Representatives of Local Medical and Panel Committees was the most satisfactory of a considerable series of such conferences because (1) relatively full opportunity was given for the discussion of all important matters; (2) the items were as far as possible taken in what seemed to the meeting to be the order of importance; (3) after full consideration it was possible to arrive at unanimous or almost unanimous decisions to present to the Ministry of Health on behalf of the profession as represented. That Dr. Gray does not agree with these decisions does not prove that they were foolish. He should not, however, misrepresent those decisions or give, as he does, an entirely erroneous impression as to the character of the conference.

Almost every sentence in his letter which purports to be a statement of fact is either false or misleading. I quote seriatim the most important of them.

1. "The Local Medical and Panel Committees have proclaimed him"—the Minister of Health—"autocrat in medical affairs." 2. "A resolution to organise the profession to refuse service under certain contingencies was dropped as unthinkable." 3. "We agreed to negotiate with the Government for a pension scheme." 4. "When there are enough practitioners to go round, it"—the practitioner's list of insured persons—"will be limited to 2000." 5. The insurance practitioner "must place himself at the beck and call, night and day, of anyone who demands his services." 6. "If he would employ an assistant he must ..... agree to the terms the committee imposes." 7. "The patients whom he attracts ..... are not his, but belong to the State."

Not one of the above statements is true. This being the state of affairs with regard to the facts, there is no need for me to say anything to controvert the opinions which, presumably, are based upon them. Dr. Gray has, of course, a right to hold whatever opinions he chooses, but if he offers them to the public he should verify his facts, and he should refrain from attributing improper motives to the general body of his colleagues, all of whom have the honour and interests of the profession at heart to at least as great a degree as he has, I doubt not, himself.

I am, Sir, yours faithfully,
HENRY B. BRACKENBURY.

Stroud Green, N., Dec. 27th, 1919.

To the Editor of THE LANCET.

SIR,—Does Dr. Addison expect that the "general practitioner will be efficient and content" if payment under the new regulations is less than what is the general desire of the profession, especially if, under the same regulations, the Ministry of Health takes from us the proprietary right in our practices? Dr. Addison is reported by you to say that "at present no measure was available of the extent of work in treating the demobilised man." I would suggest one. If Dr. Addison, who is a qualified medical man, will only do a three months' "locum" in any large industrial centre he will soon find what the calls of the demobilised man mean to the profession. What matters it to the medical profession that the Government is committed to the increased expenditure mentioned by Dr. Addison? Would it be a satisfactory excuse for a man to refuse to pay his butcher or grocer on the ground that he had promised to buy his wife a diamond tiara or his son a Rolls Royce car? That, we can see, is monstrously absurd, and irrespective of any commitments of the Government it is to be hoped that the profession will stand out for the 13*s.* 6*d.*

I think the deputation that met the Minister ought to have dealt with the proposed theft of our practices. Why should a man who has bought his practice, or one who has struggled hard to build up his practice and had to economise in the extreme to make ends meet during the earlier years of his professional life—why should these men be compelled to "stand and deliver" at the instigation of any Government department? Even a chimney sweep or a rag-and-bone man can sell the goodwill of his round. Are the medical profession to be treated as outlaws—people who have no claim to any protection?

The whole disgraceful thing is due to the comparative fewness of our votes. We cannot turn an election, but *we can strike* by coming off the panel. Let us unite and do so, unless we get fair remuneration and retain the proprietary right of our practices.

I am, Sir, yours faithfully,
D. FENTON, M.B., Ch.B., D.P.H.

Blackburn, Dec. 20th, 1919.

CONGENITAL DISLOCATION OF THE HIP.

To the Editor of THE LANCET.

SIR,—Mr. A. H. Tubby's note in THE LANCET of Dec. 20th, 1919, on the treatment of refractory cases of congenital dislocation of the hip raises a very important question, and one on which the opinions of surgeons differ widely—namely, up to what age should reduction be attempted? It has been a source of some surprise to me to find how many surgeons regard age by itself as no contra-indication to attempted reduction. On the other hand, there is a large—and I am inclined to think a larger—number of surgeons who will not operate after a certain age is reached.

Experience seems to me to be strongly in favour of not operating upon unilateral cases after 10 years of age and bilateral after 6 years. As the age-limit is approached reduction becomes increasingly difficult and the risks proportionately greater, while the prospect of a perfect result becomes smaller. When the age-limit is exceeded the results, in my opinion, do not warrant the risks, immediate and remote. I am convinced that actual harm may result, quite apart from accidents during attempted reduction, of which the ill-effects are usually temporary. The pain and disability from which these cases sooner or later suffer, and the expectation of which is the chief indication for operation, are, I think, attributable to osteo-arthritic changes occurring in the deformed joint. Unless a permanent anatomical reduction has been achieved the traumatism to which the joint has been subjected may, and in the older cases very often does, hasten the onset of those very changes in the joint which the operation was meant to avoid. Again, even though an anatomical reduction has been obtained in a case near the age-limit, changes in the joint occur which I have been accustomed to speak of as "absorptive arthritis," and which lead to a gradual wearing away of the head and neck of the femur, and sometimes the formation of a migrating acetabulum, both of which may result in gradual re-dislocation.

It is admitted by some of those who attempt reduction at any age that an anatomical cure in cases above the age-limit is uncommon, but they say they obtain an "anterior reposition," with improvement in the stability of the joint and the gait of the patient. My experience of "anterior reposition" has been extremely limited—far more limited, it would seem, than that of some surgeons. If an anatomical cure does not result, the bones, as a rule, return to their former position—i.e., there is an unquestionable relapse. I venture to suggest that those who advocate treatment of these cases after the "age-limit" has been exceeded, should produce their late results, so that those whose experience has forced them to abandon operation in the older cases may be convinced of their error.

As regards open operation, this may be resorted to with two separate and distinct objects: first, to obtain an anatomical reduction; and second, to prevent "relapse" in a hip already reduced. I agree with Mr. Tubby that the former operation should only be resorted to after the bloodless method has failed, but I cannot agree with him as to the wisdom of thereby raising the "age-limit." The younger the case that resists

manipulative methods, the stronger, to my mind, is the indication for open operation. Conversely, the nearer the age-limit is approached, the greater the care necessary before deciding to subject the patient to the extra risk of an open operation. Since Burghard emphasised the importance of the ilio-psoas, and recommended the division of this tendon in papers published in 1901 and 1903, I have invariably severed it as a part of the open operation for reduction of congenital dislocation. As regards the second operation, I think this is particularly indicated in a case in which previous bloodless reduction has been accomplished, but has been followed by relapse, and which is still young enough to stand a good chance of a cure resulting.

The method I have adopted with success has differed from Jackson Clarke's in that the joint is not opened. The periosteum is incised parallel to and about a third of an inch above the acetabular margin, and a flap of this membrane is *roughly* rugined down till the cotyloid ligament is reached and elevated from the acetabular margin. A few stitches are inserted to keep this flap turned out from the bone, and also to take in the slack in the upper part of the capsule. A more certain result should be obtained by making use of some form of bone graft. These procedures are not, in my opinion, justified at and above the age-limit, nor should either be made use of till the possibility of obtaining a satisfactory result by means of the bloodless method has been carefully excluded.—I am, Sir, yours faithfully,

Dec. 23rd, 1919. H. A. T. FAIRBANK.

COPPER ALANIN IN INOPERABLE CANCER.

To the Editor of THE LANCET.

SIR,—In your issue of Dec. 13th, 1919, appears a letter under this title from Dr. James Donelan, referring to a case of inoperable cancer of the tongue in which he has obtained distinct palliative results by the employment of copper alanin, the use of which in protozoal diseases and in inoperable cancer was suggested and its lack of toxicity in proper dosage demonstrated by me.[1]

I am glad to note that Dr. Donelan rightly does not claim a curative action, as his result in this respect corresponds with those obtained by myself and other observers who have been sufficiently interested in the clinical action of copper alanin. Mr. Aslett Baldwin, who has been kindly making investigation on the use of copper alanin in a considerable number of cases of cancer and keeping me acquainted with the results, has not yet been able to come to any conclusion definite enough to bring forward. It would be a great pity for false hopes to be aroused in such a matter, and I may remark that the only case in which to my knowledge the use of the substance has been followed by apparent recovery has been in which copper alanin was not employed alone but conjointly with other treatment, the effect of which has not been sufficiently investigated to warrant publication.

I am, Sir, yours faithfully,

J. A. SHAW-MACKENZIE, M.D. Lond.

Cumberland Mansions, W., Dec. 29th, 1919.

THE PLACE OF THE PHYSICIAN IN OPHTHALMOLOGY.

To the Editor of THE LANCET.

SIR,—I have read with very great interest Dr. Rayner D. Batten's article in THE LANCET of Nov. 29th, and also your leading article in that of Dec. 13th. It will probably be agreed—internally if not avowedly—by most ophthalmologists that Dr. Batten has expressed opinions and made criticisms which are true and to the point—namely, that sufficient justice is not done by the average ophthalmic surgeon to those numerous patients who are distinctly in need of purely medical as opposed to surgical treatment, and that the consulting physician does not meet the requirements. The ophthalmic surgeon can hardly be expected to keep abreast of both medicine and surgery and also to apply them both to ophthalmology, and it seems safe to state that he does not do so. In the present crowded state of the ophthalmic clinics how many of these purely medical cases receive sufficient attention from anyone concerned? One has simply to name syphilitic, tuberculous, and arterio-sclerotic conditions of the eye to call up a host of cases which have been seen and which conscience whispers have not received full attention and consideration. As you, Sir, indicate in your article, Dr. Batten's remedy may not be the best remedy, but it is clear that, by some means or other, the present system, in accordance with which very large numbers of medical cases are supervised, where not actually treated, by men who are essentially trained surgeons—often enough with no leanings towards medicine—should be amended in such a way as to place the medical eye patient attending an eye clinic in as favourable a position as his fellow-sufferer who attends the medical side of a general hospital for a disease of some other part of his body. Even in private practice the purely medical case is apt to be at a disadvantage, for the conscientious ophthalmic surgeon will refer him to a physician whose fees must be paid. Doubtless there is the family practitioner, but as he in most cases is not familiar with the ophthalmoscope, the patient is tossed about from one to the other very much to his own disadvantage. Why not therefore the physician oculist as well as the surgeon oculist? But, between the two, where does refraction come in?

I am, Sir, yours faithfully,

Bothwell by Glasgow, Dec. 22nd, 1919. ERNEST THOMSON

THE LIMITATIONS OF SCIENTIFIC THOUGHT.

To the Editor of THE LANCET.

SIR,—Dr. Harry Campbell, in his lecture on Mental Personality, in your issue of Dec. 27th, 1919, states that space "is acknowledged by all philosophers to be a mode of perception." This statement, as it stands, is inaccurate, as all philosophers have not by any means acknowledged this. Apart from the history of thought on this subject, the fact that Kant had to plead for his theory (that space is a mode of perception) that it "should gain favour as a hypothesis worth entertaining" is enough to show that eighteenth-century thought needed much conversion.

Dr. Campbell's remarks on the restriction of science to its own business are good reading, and advice on this point is always timely. I fear that Professor Karl Pearson, whose "Grammar of Science" he quotes, is one of the chief sinners in this regard, as he confuses the boundaries of science and philosophy, and writes mostly from a subjectivist standpoint, without seeming to realise that he has thrown overboard the "method of science" with which he started. Burdon Sanderson, somewhere in his essays, has the excellent remark that the physiologist can pursue philosophy if he has the talent for it, but must understand that the moment he enters the field of philosophy he leaves his tools behind him. It is unfortunate that these limitations, so well indicated by Dr. Campbell, are often ignored by men of science in their writings, the result being calculated to divert those who know, but merely to befog the unsuspicious reader, who will probably put the blame on his own intelligence.

I am, Sir, yours faithfully,

Liverpool, Dec. 28th, 1919. EDMUND HUGHES.

NEWINGTON v. HOLMAN AND WIFE.

To the Editor of THE LANCET.

SIR,—Referring to your account of this case in your issue of Dec. 20th, 1919, I am surprised that you failed to realise that, probably for the first time on record, lay opinion on a question of medical ethics and practice has overridden testimony offered by an expert and uncontradicted by any other competent witness. When I stated in court that it was the custom in our profession—in the absence of physical signs *pathognomonic* of general paralysis of the insane—to have more than

[1] Medical Press and Circular, July 16th, 1916; Proc. Physiological Society, Jan. 27th, 1917; Journal of Physiology, vol. li.

one Wassermann test done before making a definite diagnosis, which involves an implicit stigma of antecedent syphilis, I was uttering not merely a pious opinion, but a fact familiar to all bacteriologists, and not likely to be disputed by any experienced physician. In omitting to verify this fact before giving his judgment Mr. Justice Sankey has—unwittingly, I am sure—created a most unfortunate precedent which he would probably be the first to deplore.

I am, Sir, yours faithfully,
HUGH MUNRO, M.A. Oxon., M.D. Louvain, L.S.A. Eng.

Topsham, Devon, Dec. 28th, 1919.

MEDICAL STUDIES IN LONDON: POST-GRADUATE TEACHING.

To the Editor of THE LANCET.

SIR,—It may seem to be an inauspicious act and one rather resembling the loud proclamation of odoriferous fish to draw attention away from the enthusiasms to the prosy subject of the difficulties that lie in the way of the institution of post-graduate teaching in London of a style and dignity worthy of the metropolis of the British Empire. But in the many letters, articles, speeches, and other forms of propaganda now prevailing the existence of these difficulties seems to be ignored or overlooked until the impression left on the mind of the outsider can only be that the London schools and hospitals are afflicted with a double dose of the native English lethargy, and have hitherto failed in an important duty through sheer laziness. Without altogether denying that we have been slack in these matters, nevertheless I propose to notice several factors in the situation which, unless they are recognised and remedied, or removed, will go far to render the best laid scheme of post-graduate teaching incapable of holding its own with those of the large continental centres, and especially with that of Vienna, where, we are told, before the war American students used to spend as much as £40,000 per annum. It is with Vienna that London proposes to compete.

Now, what are the difficulties in the situation? In Vienna, as in London, the real teaching—the teaching that counts—is in the hands of the junior staffs of the hospitals. But in Vienna these men, apart from their hospital duties, do nothing else but teach. They live and work in and for and by their hospital and their teaching. They are not allowed to carry on private practice. In a word, they are professional and whole-time teachers. It may be said, however, that such a class of medical tutors is also to be found in the British hospitals and schools. That is true. Such a class does exist here. But it is very much smaller numerically than in Germany and Austria; and, moreover, with us such men are not devoting their whole time to the training of post-graduates in one special department of medicine or surgery. They teach undergraduates, in whose hands rests their future. Or else (it may be at the same time) they occupy themselves with coaching men who are reading for the higher degrees and qualifications, such as Fellowships and Memberships of the Colleges and Doctorates of the Universities. And the work for these higher examinations is, for the most part, general medicine and surgery.

And this brings me to my second point, which is, that abroad the British system of higher qualifications in general medicine and surgery is unknown. On the continent as soon as the general qualifying examination is over specialisation can begin. If a man is going to join the specialist or consulting class of practitioner he devotes his whole time to his specialty. And in Vienna he lives by teaching it. In England specialising is usually deferred until the higher degree or qualification, or both, has been attained. Thus, to take the most familiar example in London, the English Fellowship in Surgery occupies, as a rule, several years in a man's twenties, and sometimes, indeed, it eats into his thirties before he begins seriously to specialise and to teach his specialty. Or, if he has already begun to specialise, the severe course of study necessary for the Fellowship causes an interruption in his special training. Thus the teacher in England is handicapped beside his foreign competitor in: (1) being in private practice; or (and) (2) being a tutor of undergraduates in some preliminary subject; or (and) (3) being himself deeply immersed in general reading for his own higher qualifications. I am aware that recently the universities have been showing a tendency to recognise special subjects in their higher examinations, but the colleges (in England that is) do not yet do so.

So much for the teacher, whose position could easily be improved by a wise rearrangement of examination subjects. We turn now to some other dominating factors.

In Vienna the opportunities for the foreigner to gain skill and experience in operating are very much greater than they are in England, and for two reasons: first, because there is no public (or private) opinion against allowing inexperienced men to operate on hospital patients. The ear clinics of Vienna are full of patients with facial paralysis following mastoid operations performed by foreigners. This difficulty we are proud enough to look in the face and to submit to it. No English hospital surgeon would ever wish it removed. Secondly, and this difficulty, on the other hand, could be removed, but only by legislation, the working of the Anatomy Acts, and, above all, the recent scarcity of subjects render it impossible for teaching centres to obtain bodies for operation. The deficiency will no doubt be remedied in time, but even then further facilities will be required before post-graduate training can become at all what it should be. What is needed is the power for the special hospitals and special clinics of the general hospitals to obtain bodies for the teaching of their own special operative work, and this applies particularly to the highly delicate and intricate manipulations of special surgery. And for this the Anatomy Acts themselves, I believe, would require to be amended.

It does not seem to me, however, that any of those difficulties could not be got over, but their removal is going to entail more work and more time than is generally appreciated at the moment. And yet until they are got rid of English post-graduate teaching will be labouring under stress.

The most urgent need is for teachers, The clinical material in London is incomparable, but it is largely running to waste for want of teachers.

I am, Sir, yours faithfully,
DAN MCKENZIE.

Wimpole-street, Cavendish-square, W., Dec. 17th, 1919.

*** The developments of post-graduate facilities in London has been the object of very hard work by competent persons during the past year. Although our correspondent is recalling much that is familiar to readers of medical journals, his exhortations will bear fruit if they lead to a larger support of the Fellowship of Medicine.—ED. L.

THE DIETETICS OF GESTATION: OR ANTENATAL DIETETICS.

To the Editor of THE LANCET.

SIR,—May I outline certain considerations and indications for further research which seem to arise from the recent work on "vitamines," as set forth in the invaluable new document published by the Medical Research Committee as Special Report No. 38? It would appear that the "growth" or "antirachitic" factor is furnished to the milk of mammalian mothers in their diet, if at all; and in its absence therefrom rickets will ensue even in breast-fed infants, as notably in those of the wrongly fed negresses of the Columbus Hill district of New York (loc. cit., p. 88). If the breast-fed infant is to thrive, the breast itself must be properly fed.

The Growth Factor in Gestation.

So much for lactation; but what of gestation? We cannot doubt that the growth factor is as necessary for embryo and fœtus as for the infant. This assurance is corroborated by the observation that in fishes the growth factor is found in the roe, and that in birds it is found in the eggs. The developing organism, piscine or avian, is endowed and provided with this essential from the

first. As for insects, we must study, in respect of vitamines, the two contrasted diets one of which produces a "worker" or sterile female bee, and the other a fertile "queen." We may expect to find a vitamine factor of gametogenesis. The mammalian embryo, however, must depend, in this newly discovered particular, as in all others, upon the maternal blood—at least after the very earliest stages of segmentation. Surely these considerations open a new chapter in what we may call, according as whether we look at the present or the future generation, either the dietetics of gestation or antenatal dietetics.

Dental Caries in Pregnancy.

Two well-known facts, hitherto obscure in causation, would seem now to be capable of explanation, if we proceed to experiment on the lines which it is the purpose of this communication to suggest.

The less important of these two facts is the dental caries so common in pregnancy. The work of Mrs. Mellanby on the development of the dental enamel in puppies' teeth,[1] according to the supply of the growth factor in their diet, suggests that the dental caries of pregnancy may be associated with the demands of the fœtus upon the growth factor which it requires from the maternal blood. Evidently the production of enamel and the protection of enamel are not the same process; but if the growth factor be the antirachitic factor, if it be protective in function, defect of it may cause defective production of enamel in the one case and defective protection of already formed enamel in the other. We know that thyroid deficiency produces different results in the developing and in the fully developed organism respectively. Further, defect of the growth factor in experimental rats and in children may cause xerophthalmia, due to lessened resistance to bacterial action; and the case of dental caries may be analogous. Should we not now make very exact and statistical observation, *in re* vitamine content, upon the dietaries of those pregnant women who respectively do and do not suffer from the acute dental caries of gestation?

Alcoholism a Cause of Still-births.

The more important of the two facts which now seem nearer elucidation is the large proportion of hitherto inexplicable still-births. We have lately learnt how many still-births are due to syphilis. In view especially of the experimental work of Stockard and Papanicolaou on guinea-pigs (work which I lately had the advantage of studying in detail at first-hand in New York) I suspect maternal alcoholism of frequently causing still-births in our species as in the experimentally alcoholised guinea-pig.[2] Sir R. Welsh Branthwaite, in many official reports, has given the reproductive history of chronic inebriate women in reformatories, showing a proportion of still-births, with tendency thereto *increasing* in successive years, unlike the sequence of syphilis. Dr. W. C. Sullivan, in a paper prepared for the National Birth-rate Commission, has noted the same increasing tendency to still-births in inebriate women. But, even if and when we make due allowance for this factor, there will remain a quite extraordinary proportion of unexplained still-births—32·6 per cent. in the well-known American series, and at least 25 per cent. according to Dr. Amand Routh in evidence recently given before the National Birth-rate Commission (the possible influence of alcohol not having been considered in either estimate). May not some at least of these deaths be due to antenatal "rickets" or deficiency disease consequent upon defective feeding of the mother?

Surely, these questions can and should be answered, clinically, pathologically by further microscopic study of dead-born fœtuses, and experimentally. But, even already one notable contra-indication for practice in the dietetics of gestation may be defined. Stout and porter, so long commended for motherhood, are signally condemned, first, as we knew, because they contain the toxic ingredient, alcohol; and, second, as we did not know, because they do not contain the essential vitamines. Malt and yeast are rich in these factors, but the process of brewing totally destroys them, beer, as we brew it, being thus the most common and nationally important example of a preserved, stale, artificial, devitalised because vitamine-deprived "food." Whether the alcohol or the high temperature involved in brewing destroys the vitamines—or dietary ferments, or trophozymes, as should we not call them?—is a subsidiary but not unimportant question.

Conclusion.

The conclusion is that we must make further experiment upon the dietary of gravid mammals. In 1906 I introduced the term "racial poison," now in general use, for such agents as lead and alcohol, which produce the germ-cell poisoning, or "blastophthoria" of Forel, or intoxicate the embryo or fœtus when ingested by the pregnant woman or other mammal. But it would now appear that we have to reckon with antenatal deficiency disease as well as with germinal or antenatal intoxication. My friend and teacher, Dr. J. W. Ballantyne, discussing the pathological condition of certain fœtuses, wrote as follows in 1902: "At the present time the cause of the dystrophy which has been described above is unknown. It may be guessed that the conditions which produce rickets in post-natal life are active in a modified form or in a different degree here."[3] I shall be honoured if he is able to attach any importance to my present suggestions for testing his views; and perhaps to amplify his pages on diet in his volume on "Expectant Motherhood," published as recently as 1914.

The recent experience of the Zoological Gardens in respect of pregnant animals under war restrictions of food may furnish some data worthy of correlation with future researches by the Antenatal Investigation Committee of the Medical Research Committee, and elsewhere on the lines here suggested; and the dietetics of expectant motherhood, hitherto exploited mainly by superstitions about beer and by quackery about the determination of sex, may attain a new and effective importance in the genesis of a healthy race.

I am, Sir, yours faithfully,

C. W. SALEEBY, M.D., F.Z.S., F.R.S.E.

Royal Institution, W., Dec. 20th, 1919.

Addendum, Dec. 30th.—May I add two notes? 1. At our own Zoological Gardens the view is suggested that the Polar bears, Sam and Barbara, failed to breed during the war, though they always bred before and have done so again this year, because of the deficiency of fat (? of "fat-soluble A") in their diet. 2. A Scottish correspondent tells me how its mother feeds the King Penguin chicken, the first ever raised in captivity, at the gardens of the Scottish Zoological Society: "The mother penguin lives entirely on fish and feeds its offspring by the regurgitation of the digested fish, and its transference from her own beak to the beak and down the throat of the chicken. The interesting point is that, up to the hatching of the egg, the mother accepted any kind of fish as food, but since she has had to feed her chicken she declines all fish except *herrings*. You will remember that herrings are specially rich in 'fat-soluble A.' Query: Does the mother penguin know more about vitamines than the human mother?" This query raises the profound question of the hazardous supersession of ready-made finite animal instinct by ignorant, teachable, infinite human intelligence; but the fact of natural history here recorded is fascinating.

[1] THE LANCET, Dec. 7th, 1918.

[2] For summary of this work see "Alcohol: Its Action on the Human Organism," Report of Committee appointed by the Central Control Board (Liquor Traffic), H.M. Stationery Office, Kingsway; and for greater detail, the new edition, now in the press, of Horsley and Sturge's "Alcohol and the Human Body," Macmillan.

[3] "Antenatal Pathology and Hygiene," vol. ii., p. 346.

UNIVERSITY OF PARIS: FACULTY OF MEDICINE.—A revision course on the nervous sequels of the war, touching on diagnosis, prognosis, and therapy, has been arranged by Professors M. A. Gilbert and M. Maurice Villaret at the medical clinic of the Hotel-Dieu from Monday, Jan. 26th to Saturday, Feb. 14th. Thirty-six practical demonstrations will be given by the professors and ten other lecturers. Foreign doctors will be admitted on application to the Secretariat of the Faculty.

Medical News.

UNIVERSITY OF EDINBURGH.—The annual report for 1918–19 records 1683 students in the Faculty of Medicine, 1310 men and 373 women, being an increase of 49 upon the number of women in the previous session. The nationality of these students is given as follows: Scotland, 948; England and Wales, 298; Ireland, 42; India, 53; Colonies, 296; Foreign, 46. The report shows that the following medical degrees were conferred: M.B., Ch.B., 95; M.D., 30; Ch.M. 1. Three new chairs in medicine have been founded: Chemistry in relation to medicine (Dr. George Barger), Therapeutics (Lieutenant-Colonel J. C. Meakins), and Psychiatry (Dr. G. M. Robertson). The chair in psychiatry was endowed by the managers of the Royal Edinburgh Asylum. A diploma in public health has been instituted. Sir Harold J. Styles has been appointed to succeed Professor F. M. Caird in the chair of clinical surgery, and Dr. F. M. Boyd to succeed Professor W. Russell in the Moncrieff Arnott chair of clinical medicine. Dr. D. Chalmers Watson and Dr. Edwin Bramwell have been appointed senior lecturers in clinical medicine, Mr. A. A. Scot Skirving, senior lecturer in clinical surgery, and Dr. D. Murray Lyon, lecturer in practical pathology. Of outgoing appointments, Dr. Harold Pringle has gone as professor of physiology to Trinity College, Dublin, and Dr. John Tait to the same position at McGill University. Grants and bequests during the year included an anonymous gift of £10,000 to endow a lectureship in orthopædics, and the Leslie gold medal in medicine.

At the graduation ceremonial held on Dec. 19th the following degrees were conferred:—

DOCTOR OF MEDICINE.

Charles Edward Blair, Alexander Bremner, *William Francis Christie, Mary Olivia Fergusson, Joseph Geoghegan, David Alexander Ross Haddon, Sydney Herbert Hall, *Archer Hosking, Spencer Jackson, William Prideaux Selby Johnson, James Henry Kerr, Muriel Hamilton Kerr, Wilfrid M'Farlane, *William Keverall M'Intyre, Daniel M'Kelvey, *Robert Morison, William Tyrrell Patterson, *Kerr Simpson, and †Francis Hugh Stewart.

* Commended for thesis. † Highly commended for thesis.

BACHELOR OF MEDICINE AND BACHELOR OF SURGERY.

Ahmed Fahmi Abbassi, George Sandwith Bainbridge, Leonard van Renen Becker, Gladys Annie Adeline Boyd, James Godfrey Lyon Brown, Donald Arthur Cadman, Margaret Steele Caskie, Norman Henry Gustave Cloete, Alexander Younger Peattie Cochrane, Walter Hugh Critien, Dorothy Grace Davidson, Andrew Weir Davison (first-class honours), Herbert Joseph Alexander Dingwall, Henry Reginald Dodson, Norman M'Omish Dott, Evelyn Winifred Annie Dunderdale, Alexander Ralph Erskine, Millicent Fox, Gurdial Singh Gill, Alice Marian Graham, James Alphonsus Hennessy, William Augustine Hennessy, Ralph Allan Sarjeant Hoyte, Alexander Joe, Reginald Noel Johnson, Jacob Idzinga Kuit, John Learmont, Arnold Roland M'Lean, Jane Stewart M'Phail, William Malcolm MacPhail, Alexander Murray MacRae, Douglas Alexander Miller (second-class honours), Luiz Edmund Miller, Helen Morison, Georgina Isabella Blair Nichol, Emmanuel George Hamilton Payne, Donald Rankin, Edowo Awunor Renner, William Beattie Ross, Janet Craig Rugg, Muriel Sellers, Arnold Hoseason Shennan, Alexander Macdonald Simson, Shem Stein, Hugh William Young Taylor, Thomas Robert Rushton Todd, Vera Cecil Veitch, George Richard Simon Walles, David Tweedy Watt.

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE.

Francis George Macnaughton.

UNIVERSITY OF ST. ANDREWS.—At recent examinations the following candidates were successful:—

FINAL EXAMINATION FOR DEGREES OF M.B., CH.B.

Mildred Clark, Andrewina Laird, and Florence Braithwaite Mason.

DIPLOMA IN DENTISTRY.

Dental Anatomy.—Frederick Leonard Keith.

UNIVERSITY OF DUBLIN: TRINITY COLLEGE.—At examinations held recently the following candidates were successful:—

FINAL MEDICAL EXAMINATION.

Part I., Materia Medica and Therapeutics, Medical Jurisprudence and Hygiene, Pathology.—Daniel de Bruijn, David John Browne, and Dorothy Alice Daly (passed on high marks), Philip Jabkovitz, Rev. Edward Gordon Campbell, James Carlisle Davis, Mary Horan, Frederik Wynand Pienaar, Frederick William Shegog, Patrick Ryan, Nora Griffith, Cecil Samuel Wilson, Robert Ruckley Baker, and Elinor Dorothy Stopford.

Materia Medica and Therapeutics, Medical Jurisprudence and Hygiene.—James Daly Leahy, William Allen Murphy, Robert Henry Joseph Mulhall Corbet, Anthony Divir Ward, George Septimus Moran, John Mervyn Semple, James Robertson Wills, Richard Wood Power, and Alfred John Beckett.

Pathology (in completion).—John Carson Brennan, Richard Victor Dowse, Henry Allman Lavelle, and Charles William Parr.

Part II., Midwifery (B.A.O.).—Eric Henry Cooke Allen and Olive Baile (passed on high marks), Wonter de Vos Scholtz, Essie Stuart Smyth, John Henry Brenell Crosbie and Johannes Philippus de Villiers (equal), William Bernard Joseph Pemberton, Salmon Louis Feldman and Joseph Ballantyne Maguire (equal), Edward Haslett Frazer, William Burton Fox, William Theodore Micks, Becher Fitzjames Haythornthwaite, Cecil Emrys McQuade, and Joseph Hirschmann.

Surgery (B.Ch.).—Leonard Abrahamson and John Gerard Holmes (passed on high marks), Thomas Donald Gordon, Charles John de Vere Shortt, Henry Allman Lavelle, Doris Louisa Graham, William Andrew Byrn and Richard Esmonde Murphy (equal), Jessie Gilbert, Johan Frederik Wicht, Maurice Nurock, Richard William Shaw, Arthur Isaac Steyn, Samuel John Laverty, Harris Cohen, and Athanas Blagoff.

Medicine (M.B.).—Leonard Abrahamson and Frederick William Robertson (passed on high marks), Francis Victor Small, John Gerard Holmes, Wonter de Vos Scholtz, William Joseph Hogan, Thomas Donald Gordon and Johan Frederik Wicht (equal), Henry Alfred Burridge, Joseph Hirschmann, Richard William Shaw, Richard Counihan, Moira Mary Brown, John Richard Waugh, William Andrew Byrn and Harris Cohen (equal), Charles John de Vere Shortt, Frederick W. Godbey, and Thomas Madill.

DIPLOMA IN PUBLIC HEALTH.

Part I., Chemistry, Bacteriology, Physics, and Meteorology.—Victor Millington Synge, Robert Ernest Wright, Gerald Gordon Paul Beckett, Nicholas Hopkins Henry Haskins, George Francis Innes Harkness, William Henry Sutcliffe, John Stuart Dockrill, and George Oliver Fairtlough Alley.

Part II., Sanitary Engineering, Hygiene, Epidemiology, Vital Statistics, Public Health Law, Sanitary Inspection and Report.—Victor Millington Synge, Matthew McKnight, Robert Ernest Wright, Gerald Gordon Paul Beckett, Nicholas Hopkins Henry Haskins.

DIPLOMA IN GYNÆCOLOGY AND OBSTETRICS.

Roy William Chambers.

LONDON SCHOOL OF TROPICAL MEDICINE.—The following candidates passed the examination of this school at the termination of the autumn session:—

J. T. Duncan, W. G. Seymour, M. E. Barnes, C. C. Chesterman, E. C. Girling, M. Bequaert, R. Calleja, A. Kidd, E. S. Johnson, H. Lillie, G. F. Scuddar, W. Dawson, W. F. Hume, and G. M. Heydon (the foregoing passed with distinction); L. N. Lee, A. N. Bose, G. Chesney, R. Chalmers, J. H. Thomson, W. R. Young, E. C. Spaar, H. M. Pope, A. G. Fergus, J. Boodoosingh, P. F. Nunan, H. W. Webb, R. C. Briscoe, A. J. Galustian, T. D. Nair, P. W. Barnden, D. P. Jarjasingha, J. I. A. Sorensen, and N. Cheua.

UNIVERSITY OF LONDON.—A recent issue of the *London University Gazette* states that from the present time until a date to be fixed later by the Senate external students who have been debarred from presenting themselves for examinations for medical degrees by service under the War Office, or Admiralty, or by hospital service in connexion with the war, or by other approved service in connexion with national defence, will be: (1) permitted to enter at the First Examination for medical degrees in either (*a*) Inorganic Chemistry and Physics, or (*b*) General Biology, subject to the approval of the External Council; (2) credited with any subject in which they pass at the First Examination for medical degrees or Second Examination for medical degrees, Part II.; (3) permitted, if they fail in Forensic Medicine only in Group I. of the Third Examination for medical degrees, to present themselves for re-examination in that subject only in order to complete the examination in Group I., provided that they comply with the regulations in all other respects.

CENTRAL MIDWIVES BOARD.—A meeting of the Central Midwives Board was held at Queen Anne's Gate Buildings, Westminster, on Dec. 18th, 1919, with Sir Francis H. Champneys in the chair.—A letter was considered from Dr. R. P. Ranken Lyle, on behalf of the Newcastle Maternity Hospital, stating that owing to the great increase in the number of medical students in Newcastle and nurses at the maternity hospital, there is great difficulty in finding cases for all, and asking if the Board will consent to a case counting for a probationer midwife as well as for a medical student, and further stating that the medical officer of health for Newcastle would greatly approve of this concession being granted. The Board directed that Dr. Ranken Lyle be informed that the Board cannot see its way to the alteration which he suggests, as it would lower the standard of the training of midwives. The Board has no duties with regard to the training of medical students.—Letters were considered from the superintendent of the West Riding Nursing Association and the matron of the Ladies' Benevolent Institution, Chester, complaining of the treatment of candidates from those inatitutions who attended the Board's examination at Manchester in November last, and drawing attention to the views of the examiners at that centre with regard to the treatment of ante-partum hæmorrhage.—The Board also considered a letter on the same subject from the approved Teachers Subcommittee of the Midwives' Institute. The Board directed that every examiner be reminded that the correctness of any particular treatment cannot be determined by the private opinion of each examiner, but that the teaching of responsible authorities must

be accepted.—A letter was considered from the secretary of the medical board of the Birmingham Maternity Hospital, again requesting the Board to receive a deputation from that hospital on the question of holding six examinations yearly at the Birmingham centre, and a further letter setting out the reasons for holding six examinations annually. The Board directed that the secretary communicate with the various approved institutions and midwives for their views on a scheme proposed by the Board.—A letter was considered from the secretary of the Central Midwives Board for Ireland suggesting an amendment of the form of having attended a course of lectures—Rule C.1 (1) (c) (Form IV. in Schedule to Rules)—with a view to allowing a course of 20 lectures to be delivered by more than one lecturer if necessary. The Board has always considered that it is best that the lectures should be delivered by one person. Its practice has been to accept the signature of more than one person in exceptional cases, and it has found this arrangement to work satisfactorily.

A special meeting of the Board was held on the same date, with Sir Francis Champneys in the chair. Three midwives were struck off the Roll, the following charges, amongst others, having been brought forward:—

Being in attendance at a confinement, and the patient suffering from illness on or about the third day, the midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required, as provided by Rule E. 20; she neglected to take and record the pulse and temperature of the patient at each visit, as required by Rule E. 14; the midwife did not on each occasion when attending the patient wear a clean dress of washable material, and over it a clean washable apron or overall, as required by Rule E. 2; and she neglected to wash the patient's external parts with soap and water, and to swab them with an efficient antiseptic solution, as required by Rule E. 8. Medical aid having been sought for a patient, the midwife neglected to notify the local supervising authority thereof as required by Rule E. 22 (1) (a). Being in attendance at a confinement and the child suffering from inflammation of and discharge from the eyes on or about the fourth day, the midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required, as provided by Rule E. 21 (5). A midwife persistently neglected to notify the local supervising authority in cases where, pursuant to Rule E. 20, medical aid had been sought, in accordance with the provisions of Rule E. 22 (1) (a), and she did not on each occasion when attending her patients carry with her the appliances and antiseptics prescribed by Rule E. 3.

FEDERATION OF MEDICAL AND ALLIED SOCIETIES.—The regular monthly meeting of the executive committee of the Federation was held at 11, Chandos-street, W., on Dec. 30th, 1919, Sir Malcolm Morris in the chair. It was reported by the general secretary that the following medical Members of Parliament, in addition to those previously announced, had accepted seats on the council of the Federation: Captain W. E. Elliot and Dr. B. F. P. McDonald; so that out of the nine medical Members of Parliament (excluding Cabinet Ministers) six have now joined the Federation. The recent return of Lieutenant-Colonel F. E. Fremantle brings the number up to seven. The following additional societies have definitely joined since the last meeting of the committee: National Council for Combating Venereal Diseases, College of Nursing Limited, Association of Public Vaccinators of England and Wales, Medico-Psychological Association, Association of Panel Committees, Pharmaceutical Society of Great Britain, and British Science Guild. After full consideration by the executive committee of the Federation it was decided that the first step in giving effect to the resolutions of the conference held on Dec. 12th should be to approach the Minister of Health and endeavour to obtain his support on the broad principles adopted. Dr. Addison has, therefore, been asked to receive a deputation at an early date.

PROPOSED NEW HOSPITAL FOR LOWESTOFT.—From the medical report submitted to the annual meeting of the Lowestoft Hospital, Suffolk, on Dec. 16th, it appeared that during the year ending Oct. 31st, 1919, there had been 326 admissions of in-patients, 1184 out-patients, 1306 minor casualties, and 6690 attendances at the hospital under the War Pensions Scheme. The balance sheet showed an adverse balance for the year of £72 2*s.* 7*d.* in spite of a substantial increase of annual subscriptions. The cost per head per day for the maintenance of the patients and staff was 1*s.* 0¾*d.*, a moderate figure, which reflects credit on the administrative staff. A conference of medical men of the town and district was held recently, and a unanimous opinion was expressed that a new hospital on the block principle, built on a larger site, was essential in the interests of the town and district. Lowestoft is shortly to have a war memorial and the committee hope that the scheme will include an up-to-date hospital, worthy of those in whose memory it is to be erected, and adequate for the needs of the town and district it is intended to serve. The Red Cross Society has promised to give £8000, conditional on the money being applied towards the erection of a new hospital, and of the amount subscribed to the local War Memorial Fund £9500 has been earmarked for the proposed hospital.

AT a meeting of the Chester and North Wales Medical Society held on Dec. 19th, 1919, a resolution was unanimously passed that on and after Jan. 1st, 1920, the fees payable for medical examinations and reports in the case of life policies will be as under, viz:—For policies up to £100, 10*s.* 6*d.*; for policies over £100 and up to £200, 1 guinea; for policies over £200, 2 guineas.

THE VOLUNTARY HOSPITAL PRINCIPLE.—Speaking at the half-yearly meeting of the Yarmouth Hospital on Dec. 18th Dr. Raymond Shaw, the senior surgeon, said that the day had long gone by when the hospital could rightly be considered as a place for the treatment of poor patients only. Some modification of the system in the direction of admitting paying patients at the rate of one, two, or three guineas a week would have to be considered to meet the case of those unable to afford operations at home or at a private nursing establishment. This course was already adopted abroad and in the colonies, as well as in some London hospitals, and he foresaw its extension to provincial hospitals with advantage to everyone concerned.

ROYAL INSTITUTE OF PUBLIC HEALTH: CONGRESS IN BRUSSELS.—A letter has been sent to local authorities inviting them to appoint delegates to the forthcoming Brussels congress. The fee for each delegate is 1 guinea, which payment includes all the privileges of the congress, and on receipt of the names of the delegates appointed full information respecting the meeting (including travelling and hotel accommodation) will be sent to them. It is to be hoped that advantage will be taken of the opportunity to acquire knowledge of the public health administration of a country other than our own, more especially as the various government departments of Belgium have promised every support to secure the success of the meeting. The congress will be under the patronage of H.M. the King of the Belgians, and will be conducted in sections, each of which has both a Belgian and a British president. The sections comprise:—(1) State Medicine; (2) Naval, Military, Tropical, and Colonial; (3) Municipal Hygiene; (4) Industrial Hygiene: (5) Hygiene and Women's Work; (6) Bacteriology and Chemistry. The honorary secretaries of the congress are Professor Slosse, secretary to the Faculty of Medicine of the University of Brussels; Professor René Sand, secretary to the Academical Council attached to the Faculty of Medicine; Professor E. W. Hope, medical officer of health for the city of Liverpool; and Dr. T. N. Kelynack. The meetings will be held in the buildings of the University of Brussels, Leopold Park, from May 20th to May 24th, 1920.

AN IMPORTANT INSURANCE COMMITTEE DECISION.—An appeal recently undertaken by the London and Counties Medical Protection Society for one of its members against a decision of the East Sussex Insurance Committee raised a point of importance to panel practitioners. Under Article 21, Subsection 1, of the Medical Benefit Regulations an insured person desiring to select a practitioner is required to make application as the Committee, with the approval of the Commissioners, may require. In this case the manner of making application required by the Insurance Committee was set out thus:

In any case in which an application from an insured person to be placed on the list of a practitioner, either by the presentation of a medical card or in such other manner as the Insurance Committee shall from time to time prescribe, is rejected by the practitioner, it shall be the duty of the practitioner (*a*) if the applicant is in urgent need of treatment to provide such treatment as the case may require, and (*b*) in every case to inquire whether the insured person wishes to apply to another practitioner on the panel or whether he wishes to apply to be assigned by the Committee to a practitioner on the panel.

In the case under consideration the insured person had caused to be posted an application to be placed upon the doctor's panel, which had, in fact, never come to his notice, and had consequently neither been accepted nor rejected by him. When the patient required medical attendance and sent for the doctor the application was then discovered for the first time by the doctor, who refused to attend on the ground that the patient was not in his area. The question arose as to whether the posting of the application by an insured person to a doctor constituted a "presentation" within the meaning of the article quoted. It was argued on behalf of the doctor that the word "present" in its natural and ordinary meaning meant a presentation in person, and that a construction which would enable applications to be made by post would not only place a serious additional burden of clerical work on insurance doctors, but would lead to a number of administrative difficulties.

After a lengthy discussion the Insurance Committee found in favour of the doctor on appeal, and agreed that the presentation of an application by an insured person to be placed upon a doctor's panel must be made either by the applicant in person or at least by an agent in the position to answer such inquiries as the doctor might require to put to him, as well as to convey such message relating to the application as the doctor might require to be sent to the applicant.

THE Lord Mayor of London will act as chairman of the general committee promoting Health Week to be held from May 2nd to 8th next.

Viscount Astor will preside at the thirty-first Congress of the Royal Sanitary Institute, to be held at Birmingham from July 19th to 24th, 1920.

Dr. D. W. Carmalt Jones has been appointed Professor of Systematic Medicine in the University of Otago, and leaves for New Zealand early in February.

THE London division of the National Deposit Friendly Society has endowed a cot in the Alexandra Ward of the Hospital for Sick Children, Great Ormond-street, at a cost of £1000.

THE Public and Secondary Schools Red Cross Hospitals have handed over to the Village Centres Council (51, Lincoln's Inn-fields, London, W.C.) the balance of their funds, amounting to £3500.

THE Executive Committee of the Fellowship of Medicine and Post-Graduate Medical Association called for to-day (Friday) has been postponed to Monday next (Jan. 5th), at 6 P.M., owing to the death of Sir William Osler, President of the Association.

ST. THOMAS'S HOSPITAL.—The old students' dinner, postponed from Oct. 1st, will take place at the Connaught Rooms, Great Queen-street, on Wednesday, Jan. 14th, at 7 for 7.30 P.M. The chair will be taken by Sir George H. Makins.

ST. MARY'S HOSPITAL MEDICAL SCHOOL.—The annual dinner of past and present students, postponed from Oct. 1st, will take place at the Connaught Rooms, Great Queen-street, London, on Friday, Jan. 9th, at 7 for 7.30 P.M., Sir Almroth Wright presiding.

NORTH-EAST LONDON POST-GRADUATE COLLEGE.—The opening address of the spring session by Sir Humphry Rolleston on the Uses and Methods of Application of Post-graduate Teaching will be given on Tuesday, Jan. 13th, at 4.30 P.M., at the Prince of Wales's General Hospital, Tottenham, London, N. Medical practitioners wishing to attend will receive a card of invitation on applying to the Dean.

THE VERMIN REPRESSION SOCIETY.—A dinner will be held at the Connaught Rooms, Great Queen-street, London, on Friday, Jan. 9th, at 7.30 P.M., to celebrate the passage into law of the Rats and Mice Bill, originated by the society in 1908. Lord Aberconway will preside, and he will be supported, amongst others, by Professor S. J. Hickson, Sir Anderson Critchett, Dr. W. J. Howarth, Dr. Nathan Raw, M.P., Professor W. J. Simpson, and Dr. J. W. Eyre. The society has recently issued a paper intended to be of service to all affected by the Rats and Mice (Destruction) Act, a copy of which will be sent gratis to any reader who sends a stamped, addressed envelope to the honorary secretary, Lieutenant Alfred E. Moore, 44, Bedford-row, London, W.C. 1.

LITERARY INTELLIGENCE.—Messrs. Longmans announce the publication at an early date of a volume on the Life and Work of Sir Jagadis Chandra Bose, the founder of the Bose Research Institute in Calcutta, and the first native of India to obtain a European reputation in physical science. The volume has been written by Professor Patrick Geddes, of the Department of Sociology and Civics, Bombay University.—Mr. Paul B. Hoeber, of 67-71, East 59th-street, New York, has issued for the Faculty of the College of Physicians and Surgeons of New York a portfolio of 24 portraits in photogravure of the medical staff of Columbia University, by Mrs. Doris U. Jaeger, at $10, with a preface by Dr. Samuel W. Lambert.

NATIONAL ASSOCIATION FOR THE PREVENTION OF INFANT MORTALITY.—A course of advanced lectures on infant care, for teachers, infant welfare workers, mothers, &c., will be held at Morley Hall, George-street, Hanover-square, London, W., on Mondays, from 5.30 to 6.30 P.M., from Jan. 12th to March 29th. This course is in preparation for the advanced certificate of the Association. Fees for the whole course of 12 lectures, 5s.—A course of advanced lectures on infant care, especially intended for creche nurses and probationers, will be held at the Essex Hall, Essex-street, London, W.C., on Thursdays, from 7.30 to 8.30 P.M., from Jan. 8th to March 25th. This course is in preparation for the creche nurses' certificate now instituted by the association in coöperation with the National Society of Day Nurseries. Fees for the whole course of 12 lectures, 10s. In both cases tickets can be obtained from Miss Halford, secretary, National Association for the Prevention of Infant Mortality, 4, Tavistock-square, London, W.C. 1.

NEW YEAR HONOURS.—A representative group of medical names appears in the list of distinctions published on Jan. 1st, 1920. To Sir Bertrand Dawson has fallen the honour, on which we comment elsewhere, of becoming the first practitioner peer. Knighthoods have been granted to Mr. Josiah Court, M.R.C.S., of Chesterfield, a magistrate and consulting surgeon to the Derbyshire Miners' Union; to Mr. Henry J. Gauvain, M.D., M.Ch., medical superintendent of Lord Mayor Treloar Cripples' Hospital at Alton; and to Mr. Frederick S. Lister, M.R.C.S., research bacteriologist to the South African Institute for Medical Research. Dr. W. T. F. Davies, a Member of the South African House of Assembly, receives the C.M.G. Three medical women receive the Kaisar-i-Hind Medal; Dr. Kate A. Platt, principal of the Lady Hardinge College at Delhi; Dr. Margaret I. Balfour, joint-secretary to the Lady Dufferin Fund; and Dr. Ida S. Scudder, in charge of Mary Taber Schell Hospital at Madras. Other recipients of honours, closely associated with the medical profession, are Sir W. E. Cain, a generous donor to Liverpool hospitals, who becomes a baronet; Mr. G. W. Needham, president of Oldham Royal Infirmary, and Mr. Thomas Neill, chairman of the Ministry of Health Consultative Council on Health Insurance, who become knights bachelor. Mr. Otto Beit's labours for the South African hospitals have been recognised by a K.C.M.G. Learning and exact science are honoured in the persons of Sir Richard Glazebrook, late director of the National Physical Laboratory, who becomes K.C.B.; and Professor Arthur Schuster, late secretary to the Royal Society, who has been knighted.

LIVERPOOL MEDICAL INSTITUTION.—At a meeting of the Pathological Section, held on Dec. 18th, 1919, with Dr. Hubert Armstrong, Vice-President, in the chair, Mr. Keith Monsarrat read a note on Two Cases of Massive Calculous Deposit in the Urinary Channels which had developed in soldiers while under treatment for fractures. Radiographs showed the development and retrogression of the calculi. The speaker was of the opinion that such cases did not belong to the domain of surgery, but could be cured by medical measures and exercise. Mr. G. P. Newbolt recounted a similar case where cure resulted after continuous treatment with citrate of potash. Professor E. E. Glynn contributed a paper on the Presence of Spirochætes in the Sputum of a Case of Bronchiectasis. The sputum was airless and purulent, but not nummulated, and contained round, yellow granules consisting of bacteria and spirochætes, the latter sometimes in enormous numbers. It seemed clear that these granules were formed not in the mouth but in the lung, and formed an airless medium wherein spirochætes could develop. It was suggested that they were a variety of Dittrich's plugs, which would probably be found to contain spirochætes if examined with that possibility in view. Graphs of the morphological features of these spirochætes, obtained by the measurement of large numbers of camera lucida drawings, were shown and compared with graphs of other spirochætes. They supported the suggestion that the condition was not the chronic stage of a previously acute bronchial spirochætosis, but was a secondary mouth infection. Professor Glynn was inclined to the view that the spirochætes in the granules were pathogenic, at least to the extent of increasing the severity of the disease. A similar condition had been found in a second case of bronchiectasis.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.—At a meeting held in Manchester on Dec. 19th, 1919, Dr. J. W. Bride read a paper on the After-results of the Removal of One or Both Appendages in Hysterectomy for Fibroids. The patients in 300 cases operated on at St. Mary's Hospital, Manchester, between the years 1909 to 1913 inclusive, for fibroids or, in a few instances, for chronic metritis, had been circularised. Dr. Bride based his paper on the 231 replies received. Questions were put bearing on general health, temperament, headaches, digestion, nervous stability, pain, capability for work, nutrition as regards fat, hot flushes, sexual inclination and comfort, and memory. Answers to the first six appeared in favour of the radical operation, but, with the possible exception of pain, the distinction was not very marked. The replies to the next four questions, particularly as regards flushings and sexual inclination and comfort, suggested the advantage of a conservative operation. The last question put produced indeterminate replies. In general there appeared to be very little to choose between the two operations. It was noticeable that flushings, both immediate and remote, were complained of in a number of cases where a conservative operation had been done. Dr. A. Donald, Dr. J. E. Gemmell, and Dr. W. E. Fothergill instanced objections to a conservative operation, the last-named observing that, as the ovary after hysterectomy ceased to function at the end of two years, it did not seem worth while to conserve it for that short period. He suggested as a sound rule for all operations involving removal either to leave a "working set" or to make a clean sweep.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

HERZFELD, GERTRUDE, M.B., Ch.B., has been appointed Assistant Surgeon to the Royal Hospital for Sick Children, Edinburgh.

JONES, D. W. CARMALT, M.D., F.R.C.P., to the Chair of Systematic Medicine in the University of Otago.

SMITH, A. W., M.D., temporary Assistant Physician, Crichton Royal Institution, Dumfries.

WILLIAMS, E. C., M.D. Lond., Medical Officer of Health by the Glamorgan County Council.

Royal Portsmouth, Portsea, and Gosport Hospital: WOODBURN, W. Y., M.D., Ch.B.Edin., Honorary Assistant Physician; CARLING, W., M.B., B.Ch. Camb., Honorary Assistant Anæsthetist.

Certifying Surgeons under the Factory and Workshop Acts: COSGROVE, E., L.K.Q.C.P., L.R.C.S. Irel. (Maynooth); GALLOWAY, W. H., M.R.C.S., L.R.C.P. Lond. (Otley); GILMORE, W., M.B., B.Ch., B.A.O. Belf. (Saintfield).

Vacancies.

For further information refer to the advertisement columns.

Ballinasloe District Asylum.—M.O. £225.

Birkenhead Borough Hospital.—Two Hon. Asst. M.O.'s.

Brighton, Royal Sussex County Hospital.—Hon. Surg. Clin. Asst.

Central London Throat and Ear Hospital, Gray's Inn-road, W.C.—Hon. Asst. Anæsth.

Charing Cross Hospital, W.C.—Orthop. S., Hon. Anæsth., and Three additional Hon. Anæsths.

Chester City and County.—Asst. M.O.H. £500.

Derby, Derbyshire Royal Infirmary.—Cas. O. £150.

Dorchester, Dorset County Council Education Committee.—School Dentists. £400.

East African Protectorates.—M.O.'s. £400–£20–£500.

Great Northern Central Hospital, Holloway, London, N.—H.S. £150. Two P.'s.

Huddersfield County Borough Education Authority.—Asst. Sch. M.O. £475.

Ilford Urban District Council.—Asst. M.O.H. £500.

Italian Hospital, Queen-square, W.C.—Hon. Anæsth. and Hon. Asst. Anæsth.

Lancaster, Royal Albert Institution for the Feeble-Minded.—Asst. M.O. £500.

Leasowe, Cheshire, Hospital for Children.—Jun. Res. M.O. £150.

Leicester Royal Infirmary.—Res. Anæsth. £300.

Liverpool, City Infectious Hospital, Fazakerley.—Asst. Res. M.O. £250.

Liverpool, Fazakerley Sanatorium for Tuberculosis.—Asst. Res. M.O. £300.

London Lock Hospital, 91, Dean-street, W.—Hon. S.

Lowestoft Borough.—Female M.O., &c. £500.

Manchester Children's Hospital, Gartside-street, Manchester.—Asst. M.O. £200.

Manchester Royal Infirmary.—Res. Anæsth. £100.

Metropolitan Asylums Board.—Sen. Asst. M.O. £450. Second Asst. M.O. £400. Third and Fourth Asst. M.O.'s. £350.

Middlesex County Council, Napsbury Mental Hospital, near St. Albans.—Jun. Asst. M.O. £400.

Middleton-in-Wharfedale Sanatorium, near Ilkley.—Asst. M.O. £450.

Ministry of Pensions Hospital, Orpington, Kent.—Res. Aural S. £400.

Neath Rural District Council.—M.O.H. £750.

Newcastle-upon-Tyne, Hospital for Sick Children.—Junior Res. M.O. £200. Hon. S. Also Hon. P. to Skin Dept.

Newport Education Committee.—Dent. £400.

Norwich, Norfolk and Norwich Hospital.—Cas. O. £200.

Nottingham City Asylum.—Second Asst. M.O. £350.

Nottingham General Hospital.—Cas. H.S. £150.

Plymouth Education Authority.—Asst. Sch. M.O. £400.

Queen Mary's Hospital for the East End, Stratford, E.—Hon. S.

Rainhill, near Liverpool, County Asylum.—Asst. M.O.'s. £300.

Reeth Union and Rural District Council, Yorkshire.—M.O.H., &c. £95.

Royal Free Hospital, Gray's Inn-road, W.C.—Surg. Regist. and Hon. Asst. Dent. Surg.

St. Helens County Borough.—Asst. M.O.H. £400.

Seamen's Hospital Society, Dreadnought Hospital, Greenwich.—S.

Seamen's Hospital Society, Hospital for Tropical Diseases, Endsleigh Gardens, N.W.—Med. Supt. £400.

Sheffield University.—Demonstrator in Path. and Bact.

Stafford, Staffordshire General Infirmary.—H.P. £200.

Stockport Infirmary.—Jun. Res. M.O. £200.

Straits Settlements.—Professor of Anatomy for Medical Department. $600 a month.

Sunderland Education Committee.—Female Asst. Sch. M.O. and Two Sch. Dent. £450 each.

Surrey, Virginia Water, Holloway Sanatorium (Hospital for the Insane).—Female Jun. Asst. M.O. £300.

University of Birmingham, Faculty of Medicine.—Lecturer in Bacteriology. £450.

Victoria Hospital for Children, Tite-street, Chelsea, S.W.—H.P. and H.S. Each £100.

Westminster Hospital, Broad Sanctuary, S.W.—P.

Whittingham County Asylum, Preston, Lancs.—Asst. M.O. £420.

Worcestershire County Council.—Asst. County M.O. £450.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Canterbury, Shanklin, Colnbrook, Dewsbury, Gamlingay, and Burnham Market.

Births, Marriages, and Deaths.

BIRTHS.

BESWICK.—At Elmwood House, Nantwich, on Dec. 24th, 1919, to Dr. and Mrs. W. T. Beswick (née Chandler)—a son.

CURNOCK.—On Dec. 26th, 1919, at a Nursing Home, the wife of D. Reginald Curnock, M.R.C.S., L.R.C.P., L.D.S. Eng., of a son.

DAVIS.—On Dec. 21st, 1919, at Upper Berkeley-street, W., the wife of K. J. Acton Davis, F.R.C.S., of a son.

DUN.—On Dec. 22nd, 1919, at Rodney-street, Liverpool, the wife of Robert Craig Dun, F.R.C.S. Eng., of a daughter.

FOX.—On Dec. 27th, 1919, at Ashburn-place, South Kensington, the wife of Reginald A. Fox, M.C., L.D.S., D.D.S., of a son.

HURRY.—On Dec. 25th, 1919, at "Ventnor," St. Matthew's-road, Worthing, the wife of Captain H. R. Hurry, R.A.M.C., of a daughter.

ILES.—On Dec. 26th, 1919, at Victoria-square, Clifton, Bristol, the wife of Arthur E. Iles, O.B.E., F.R.C.S., of a daughter.

LINDSEY.—On Dec. 20th, 1919, at "Beaumont," Portman-crescent, Bournemouth, the wife of Dr. Mark Lindsey, of a son.

MARRIAGES.

DUFF—LUMSDEN.—On Dec. 30th, 1919, at St. John's Church, Westminster, Mr. Donald Duff, F.R.C.S., Newton-place, Glasgow, to Margaret Simpson, only daughter of the late James Lumsden, Edinburgh.

LYNN-THOMAS—MACRAE.—On Dec. 9th, 1919, at St. George's U.F. Church, Edinburgh, by the Rev. Prof. H. F. MacKintosh, Charles Ivan Lynn-Thomas, formerly Lieutenant, 1st South Wales Borderers, son of Sir John Lynn-Thomas, K.B.E., C.B., C.M.G., and Lady Lynn-Thomas, R.R.C., of Greenlawn, Penylan, Cardiff, and Dorothy Guthrie MacRae, daughter of Duncan MacRae, of Ruthven, Kingussie.

SCOTT—WADDELL.—On Dec. 26th, 1919, at Woodbank Hotel, Dumfries, Captain George Macdonald Scott, M.C., R.A.M.C. (S.R.), to Mia Mackintosh Gray, daughter of J. B. Waddell, Airlie, Dumfries.

DEATHS.

BRUNTON.—On Dec. 25th, 1919, at Rutland-gardens, Hove, Linton Brunton, M.R.C.S., aged 84.

BURGE.—On Dec. 25th, 1919, suddenly, Dr. Frederick John Burge (late of Shanghai), of Bournemouth.

JOHN.—On Dec. 27th, 1919, at Albion-road, Hampstead, William John, M.R.C.S. Eng., aged 78.

LISTER.—On Dec. 24th, 1919, at Bexhill, Charles Henry Lister, M.D., formerly of Croydon and Tunbridge Wells, aged 76.

LYLE.—On Dec. 30th, 1919, suddenly, at Speldhurst, Elmfield-road, Bromley, Kent, in her 48th year, Annie Seaton, the dearly loved wife of Herbert Willoughby Lyle, M.D. Lond., F.R.C.S., and only daughter of the late E. W. Winton, of Speldhurst, Tunbridge Wells, and of Mrs. Winton, of Etherton House, Widmore-road, Bromley. Funeral service at the Parish Church, Bromley, on Saturday, Jan. 3rd, at 11.15 A.M.

ROSS.—On Dec. 25th, 1919, at "Roslyn," 153, Brigstock-road, Thornton Heath, Surrey, William George Ross, M.D., formerly of the 8th (The King's) Regiment and Army Medical Department, aged 79. (15th May, 1840.)

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Communications, Letters, &c., to the Editor have been received from—

A.—Dr. A. S. Alexander, Lond.

B.—Dr. A. E. Boycott, Radlett; Dr. W. L. Brown, Lond.; Dr. E. C. Bousfield, Lond.; Mrs. Brunelle, New York; Dr. J. Blomfield, Lond.; Board of Trade, Lond.

C.—Dr. C. Coombs, Bristol; Dr. Christopherson, Norwich; Dr. F. G. Crookshank, Lond.; Dr. B. Crichton, Ballysodare; *Le Courrier Colonial*, Paris; Dr. F. F. Caiger, Lond.; Chester and North Wales Medical Society, Chester, Hon. Sec. of; Mr. L. Cappelli, Bologna; Mr. A. T. Clarkson, Lond.

D.—Mr. H. Davis, Lond.

G.—Mr. P. Gully, Hove; Dr. J. P. Gray, Exeter.

H.—Dr. A. F. Hurst, Lond.; Dr. C. T. W. Hirsch, Lond.; Dr. J. Haddon, Denholm; Mr. B. Hughes, Bradford; Dr. C. W. Hutt, Dudley; Dr. G. Herzfeld, Bolton.

I.—Dr. E. C. B. Ibotson, Corris.

L.—Mr. H. K. Lewis, Lond.

M.—Ministry of Health, Lond.; Ministry of Pensions, Lond.; Mr. J. S. Milne, Swalwell-on-Tyne; Dr. I. Macdonald, Huelva; Mr. G. P. Mills, Birmingham; Dr. H. M. Mackay, Lond.; Mr. C. MacMahon, Lond.

N.—National Safety Council, Chicago; Mr. J. Nixon, Londonderry; Mr. J. E. Nicole, Lond.

O.—Dr. Orchard, Kingussie.

P.—Pastel Society, Lond., Sec. of; Mr. L. Paton, Lond.; Polish Information Committee, Lond.; Dr. V. Pauchet, Paris; Dr. A. Pettit, Paris; Mr. F. W. Pilkington, Kencott.

R.—Royal Institute of Public Health, Lond.; Rockefeller Institute for Medical Research, Lond.; Mr. H. M. Rainsford, Lond.; Dr. R. R. Rentoul, Liverpool; Sir G. A. Reid, Southsea.

S.—Dr. R. H. Shaw, Great Yarmouth; Mr. F. P. Smith, Crossdoney; Prof. W. Stirling, Manchester.

T.—Mr. C. W. J. Tennant, Lond.; Dr. E. Thomson, Bothwell; Dr. L. T. Thorne, Lond.; Dr. C. J. Thomas, Lond.; Dr. A. H. Thompson, Lond.; Prof. A. Thomson, Oxford.

V.—Vermin Repression Society, Lond.

W.—Dr. J. W. Wood, Lond.; Dr. H. Williamson, Lond.; Dr. J. K. Welsh, Motherwell; Dr. F. P. Weber, Lond.; Mr R. B. H. Wyatt, Lond.; Miss C. Whitworth, Doncaster.

Communications relating to editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, W.C. 2.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, Jan. 6th.

SURGERY: SUB-SECTION OF ORTHOPÆDICS (Hon. Secretaries—A. S. Blundell Bankart, R. C. Elmslie): at 5 P.M.

Cases:

Mr. Laming Evans: Osteitis of Tibia of Doubtful Nature.

Mr. R. C. Elmslie: Traumatic Coxa Vara in a Child aged 8 Months, due to a Birth Injury.

Wednesday, Jan. 7th.

SURGERY: SUB-SECTION OF PROCTOLOGY (Hon. Secretaries—W. Sampson Handley, Sir Gordon Watson): at 5.30 P.M.

Discussion:

On "Diverticulitis," to be opened by Dr. Maxwell Telling. The Discussion will be continued by Professor A. Keith, Mr. Lockhart-Mummery, Dr. E. I. Spriggs, Mr. McAdam Eccles, Mr. Grey Turner, Mr. Rutherford Morison, Mr. Hamilton Drummond, Mr. Garnett Wright, Mr. James Berry, Mr. R. P. Rowlands, Mr. Maynard Smith, Mr. H. S. Clogg, Mr. A. C. Jordan, Mr. Ivor Back, Mr. Peter Daniel, Mr. L. E. C. Norbury, Mr. W. E. Miles, Dr. de Bec Turtle, Sir C. Gordon Watson, Mr. Hernaman-Johnson, Mr. Sampson Handley.

A collection of specimens illustrating the subject of discussion will be on view from 2.30 P.M.

If necessary the Discussion will be adjourned and be reopened by the President of the Sub-Section, Mr. Lockhart-Mummery.

Following the meeting on Jan. 7th the Annual Dinner of the Sub-Section will be held at Oddenino's Restaurant, 60, Regent-street, at 8 for 8.15 P.M. Cost of dinner 13*s.* 6*d.*, exclusive of wine. Members of the Sub-Section are entitled to invite one guest, but must intimate their intention to Mr. Sampson Handley before Jan. 3rd.

Thursday, Jan. 8th.

NEUROLOGY (Hon. Secretaries—P. W. Saunders, George Riddoch): at 8.30 P.M.

Paper:

Dr. F. M. R. Walshe: Forms of Peripheral Neuritis among Troops serving with the Egyptian Expeditionary Force 1915–1919.

Friday, Jan. 9th.

CLINICAL (Hon. Secretaries—T. P. Legg, S. A. K. Wilson): at 5.30 P.M.

Address by the President:

Sir Anthony Bowlby: The Application of War Methods to Civil Practice.

Exhibition of Cases.

Will any members of the Section who desire to show cases please communicate with the Hon. Secretaries?

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

LONDON HOSPITAL MEDICAL COLLEGE (UNIVERSITY OF LONDON), Mile End, E.

A Course of Instruction on the Diseases of Children, open to Post-Graduates and to Students of the Hospital. (The lectures will be illustrated by lantern slides.)

SATURDAY, Jan. 10th.—10.15 A.M., Dr. Hutchison: General Diseases. (At the Anatomical Theatre.)

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.

Christmas Lectures on the World of Sound, by Prof. W. H. Bragg, C.B.E.:—

TUESDAY, Jan. 6th.—3 P.M., Lecture IV.:—Sounds of the Town.

THURSDAY.—3 P.M., Lecture V.:—Sounds of the Sea.

SATURDAY.—3 P.M., Lecture VI.:—Sound in War.

BOOKS, ETC., RECEIVED.

FROWDE, H., AND HODDER AND STOUGHTON.

The Cambridge Note Book for Practical Biology (Zoology). By J. S. Gardiner, F.R.S., and L. A. Borradaile, M.A. 5*s.*

A Guide to Gynæcology in General Practice. By Comyns Berkeley, M.D., M.C., and Victor Bonney, M.S., M.D. Pp. 467. 31*s.* 6*d.*

The Microscopic Anatomy of the Teeth. By J. Howard Mummery, D.Sc., L.D.S. Pp. 382. 25*s.*

LANE, JOHN, London and New York.

The End of a Dream. By A. M. N. Jenkin. Pp. 292. 7*s.*

The Margaret Book. By A. Clark, N.Z.M.C. Pp. 189. 5*s.*

LAURIE, T. WERNER, London.

The Truth of Spiritualism. By "Rita" (Mrs. Desmond Humphreys). Pp. 152.

Madame Prune. By Pierre Loti. Translated from the French by S. R. C. Plimsoll. Pp. 240. 10*s.* 6*d.*

Why we do it: Pathological Gossip. By R. McMillan. Pp. 218. 6*s.*

LEA AND FEBIGER, Philadelphia and New York.

Pulmonary Tuberculosis. By M. Fishberg, M.D. 2nd ed. Pp. 744.

Roentgen Interpretation. By G. W. Holmes, M.D., and H. E. Ruggles. Pp. 212. $2.5.

The Principles of Nursing. By C. A. Brown, R.N. Pp. 262.

A Manual of Hygiene and Sanitation. By S. Egbert, M.D. 7th ed. Pp. 554.

Rules for Recovery from Pulmonary Tuberculosis: A Layman's Handbook of Treatment. By L. Brown, M.D. 3rd ed. Pp. 192.

Applied Anatomy and Kinesiology. By W. P. Bowen, M.S. 2nd ed. Pp. 334.

Experimental Pharmacology. By H. McGuigan, M.D. Pp. 250.

Hygiene and Public Health. By G. M. Price. 2nd ed. Pp. 280.

Notes, Short Comments, and Answers to Correspondents.

CHRONIC DISEASE AND CIVIC INEFFICIENCY

Being Part of a Chadwick Lecture on "The Relation of the State to Chronic Disease."

BY R. O. MOON, M.D. OXON., F.R.C.P. LOND.,

CONSULTING PHYSICIAN, WESTERN GENERAL DISPENSARY, MARYLEBONE, ETC.

How is the State to deal with the civic inefficiency which results from the partial disablement caused by chronic disease? Speaking generally, most patients with any kind of chronic disease who are able to be up and about are really the better for some occupation; the occupation, in fact, may be regarded as a part of the treatment. Unfortunately, men who suffer from chronic disease are seldom able to earn a full day's wage; cases of tuberculosis, which are otherwise fairly well, cannot as a rule work for more than 5–6 hours per diem, and on economic grounds it would be justifiable to subsidise the labour of consumptives.

In regard to epileptics—I am not speaking of those who have fits with great frequency or in whom there may be indications of mental alienation—the average case that comes to the out-patient department of a hospital can, from the point of view of physical strength, work at most ordinary occupations with some safeguarding. Obviously there are activities for which epileptics are ineligible; thus a large part of the building trade would have to be ruled out, and any occupation in close contact with machinery. There remain a number of employments in which an epileptic can do the work of an A 1 man.

Many other diseases of the nervous system, both those technically known as "functional" as well as those in which some organic lesion of the spinal cord is present, are far from being incompatible with wage-earning occupation if careful study were made of the kind of activity suited to each affection.

As regards the sum-total of loss of labour, pain, and general suffering, diseases connected with the heart probably exceed tuberculosis in importance; but for heart disease there are no after-care committees. Cardio-vascular disease should, like tuberculosis, be attacked at its source. The most important single cause of heart disease is rheumatism, and could we abolish this in early life 50 per cent. of circulatory troubles would disappear. Rheumatism should be easier for the State to deal with than tuberculosis, since we are not troubled with the question of infectivity; on the other hand, we have more precise knowledge of tuberculosis than of rheumatism.

Industrial Strain.

Apart from rheumatism, the dominant cause of circulatory breakdown is the strain of industrial conditions. Work which a man of 20 finds well within the range of his powers may be exhausting when he reaches the age of 50. Some occupations involve periodical rushes, and are unfitted for most men past middle life. The ætiological importance of industry as a factor in disease has hardly been sufficiently appreciated. Each succeeding stage of industrial development has been attended by labour problems, social difficulties, and manifestations of ill-health peculiarly its own.

At the present day there are special types of fatigue due (1) to the intensive nature of the work; (2) to its monotony; (3) to strain. There are a number of hours during which a man can work comfortably, and beyond these labour loses its productive value. Obviously, all occupations are not equally fatiguing for the same number of hours worked, consequently the number of hours of work must differ considerably in different trades, and to fix the same length of working day for all trades would be highly irrational.

It ought to be possible to draw up a list of chronic diseases with the kinds of activities for which they are suited. In this the State should work hand in hand with the medical profession, by thinking over the various industrial and agricultural occupations, collating the growing medical experience thereon, in order to determine what activities are favourable to what diseases. Something of this kind has been done in connexion with disabled soldiers, but it might be extended to all citizens. Thus the employment bureau of the labour exchanges has furnished a very useful list of occupations suitable for various forms of inactivity, e.g., occupations suitable for those who have lost one arm have been found to be: (1) Substation switchboard; (2) wholesale tailoring; (3) hand-loom weaving; (4) french polishing; (5) draughtmanship; (6) sdrveying; (7) commercial work; (8) book-keeping; (9) commercial traveller; (10) forestry and certain forms of agricultural work; (11)

telephone exchange operator; (12) diamond cutting (only 70 per cent. of wages can be earned by them at this).

In numerous cases a man working before the war at an unskilled trade for which his disability unfits him, has been trained in a Government school for a skilled occupation; many inborn talents thus have the opportunity of displaying themselves.

Varieties of Light Occupation.

One advantage of a civilisation with its highly developed division of labour is that it makes it more possible to find occupation for the permanently disabled owing to the greater variety of "light jobs." In a purely agricultural community the outlook would be far less favourable, as there are but few departments of agricultural work where the labour can be considered as really light. Speaking generally, the occupations connected with agriculture are specially suited for those who are suffering from shell shock, neurasthenia, or tuberculosis. Connected with agriculture, though subsidiary to it, are horticulture, fruit-growing, and estate carpentry, all of which may be suitable for those requiring outdoor employment but unable to do heavy work.

What occupations can be indulged in safely and with profit by those suffering from heart affection? Most doctors have met with men who, in spite of a serious disease of their heart, have been able to do astonishingly hard work, but such cases are exceptional. "Basket-making," which is naturally classed as "light work," sometimes proves unsuitable for those suffering from a comparatively minor affection of the heart; the making of a large basket involves a wide extension of the arms and an undue strain upon the heart. A discharged soldier with a not very serious condition of his heart, found himself unable to do boot repairing because it involved standing upright at the bench for long hours at a stretch, which, of course, puts a strain upon the circulation. Boot-making, though classed as a "light occupation," is not suitable for most forms of heart disease as it involves much use of the arms both in hammering and wide stitching; the posture of boot-makers is also bad for all kinds of chest complaints. But many kinds of light leather work are eminently suitable for such ailments, and the fine stitching required in the boot trade has proved particularly suitable for some forms of neurasthenia. It has been stated by Sir James Barrett that the unemployed of the better class are those who have never been taught to do anything properly. If every member of the community received an adequate training for some special occupation the increased value of their labour would abolish poverty and solve the social problem.

COLONIAL HEALTH REPORTS.

St. Helena.—The estimated civil population on Dec. 31st, 1918 was 3654. The death-rate in 1918 among civilians was 9·85 per 1000, the lowest since 1909. The birth-rate was 30·65 per 1000, the highest for the last 10 years. Of the 36 deaths registered, 9 were over 70, 3 over 80, and 1 of 92 years of age. There were 37 marriages, as against 33 in 1917. The Acting Colonial Surgeon reports a slow but steady decline in the general health of the colony, as evidenced by mild epidemics of influenza, dysentery, and chicken-pox. Cases of phthisis and tuberculosis were rare. Dental caries is very prevalent and runs riot, as there is no dentist in the colony; it is very largely responsible for the low stamina of the inhabitants and their inability to resist minor diseases. The island has been fortunate in entirely escaping the so-called Spanish influenza. The mean temperature was 61·4° F. and the total rainfall 40·13 inches (9·30 inches less than in 1917). There were 164 admissions to the hospital during the year and there were 8 deaths. The nursing staff was under strength for the greater part of the year, and much extra work and responsibility fell on the shoulders of the superintendent, Miss Hart.

Fiji.—According to a report by the acting Colonial Secretary (Mr. R. Rankine) on the Blue-book for 1918 the estimated population on Dec. 31st, 1918, consisted of 4748 Europeans, 2803 half castes, 61,745 Indians, 2709 Polynesians, 87,761 Fijians, 2100 Rotumans, 913 Chinese, and 637 others—total 163,416, as compared with 139,541 at the Census of 1911. As compared, however, with 1917 there was a decrease of 2575. The outstanding event of the year, fraught with serious consequence to the colony, was an outbreak of influenza in November. The epidemic came at a time when, owing to the depletion of the medical service, local shipping difficulties, and the dislocation of steamer services with Australia and New Zealand in consequence of labour troubles, the task of coping with it was more difficult than would have been the case in normal times. So soon as the epidemic assumed a serious nature the services of practically the whole European population were placed unreservedly at the disposal of the Government, and voluntary workers assisted in attending not only Europeans, but also Fijians, Indians, and other coloured members of the community. Temporary hospitals were established in Suva and other centres, and hospitals belonging to plantation owners were requisitioned and used for the treatment of patients. Medical relief parties from New Zealand and Australia, under Colonel Jennings and Major Alexander respectively, rendered excellent assistance in various parts of the colony. The local medical officers worked at exceedingly high pressure throughout the epidemic, and their services and those of the medical relief parties and voluntary workers undoubtedly saved a very large number of lives. Notwithstanding the steps taken, the epidemic caused deaths numbering 8145, being 4·96 of the population, while the expenditure incurred amounted to some £10,000. The Colonial Hospital, Suva, is the principal medical institution in the colony. The number of patients treated in 1918 was 2480, of whom 266 were Europeans. There is a branch hospital at Levuka; admissions during 1918 were 534. There are 11 provincial hospitals for the treatment of native Fijians, and to these the admissions totalled 6324. Government medical officers attached to several of the hospitals were absent during the year on war service, and in those cases native medical practitioners were left in charge. A leper asylum on the island of Makogai is under the charge of a medical superintendent, who is assisted by a European medical officer and five European and three Fijian nursing sisters. The lepers in the asylum on Dec. 31st, 1918, numbered 327.

Seychelles.—The estimated population of the colony at the close of the year 1917 was 24,572. The birth-rate for the year was 26·13 per 1000, the proportion of illegitimate children being high; the death-rate was 17·4 per 1000. In the Victoria Hospital 748 in-patients were treated, and in the Government dispensaries 3583 patients were treated. The Maternity Home continued to be well patronised, the number of patients admitted being 207, and the number of babies born 151. The average number of patients in the Lunatic Asylum, South Mahé, during the year was 23. An epidemic of measles which started in December, 1917, continued for the first six months of 1918. The schools were kept closed during January, February, and March. Nearly all the children under 15 years of age contracted the disease, which was for the most part of a mild type, and complications were singularly few. There were no other epidemic diseases during the year, and the general health of the inhabitants was good. The prevailing poverty made itself felt on health to a small extent, the sufferers being mostly very young children. The ankylostomiasis campaign was continued with unabated vigour by Dr. J. F. Kendrick of the International Health Board. By the end of the year the campaign had been completed over the whole of the Mahé, to the great benefit of the general health.

DEA PALLIDA.

O! Lady of the twisted smile and doubtful glance,
Creeping with hungry lip and darting eye
Throughout the world! Men worship you in France;
On Thracian hills, through Spain and Italy
They tend your fires; the misty, northern isle
Is careful of your rites; far sun-rise lands
Are ancient slaves to you; exulting Nisle
Has caught you to his breast; the desert sands
Are burned with your desire; each Holy Place
Has pushed aside the veil (Jerusalem
Or Mecca—where you will), and seen your face,
And pays the growing price. Your diadem,
Jewelled with tortured souls, is fair to see,
And where you nod men follow steadfastly.

S. K. VINES.

FATAL BLOOD-POISONING IN NORFOLK.

TWO fatal cases of so-called blood-poisoning have been recently reported in Norfolk. The first case occurred at Yarmouth. The patient sustained a slight wound, little more than a scratch, on the first finger of her left hand while cutting up some foreign bacon on Dec. 12th. Next day she complained of some pain in her chest and sent for a doctor, who considered at first that she was suffering from a form of acute rheumatism of the muscles of the chest wall. There had been a shivering attack the previous night, but there was no sign of inflammation either in the cut finger or the arm. A consultant's opinion was obtained from Norwich, and the medical men agreed that there was no cause in the lungs to account for the symptoms, but that the patient was suffering from septicæmia, which had originated from the wound in the finger, but had passed the usual barriers in the forearm and axilla and directly affected the general circulation. The patient died a few days later from acute septicæmia.

The second case was that of a middle-aged man who ran a splinter of wood under one of his finger-nails. He consulted his panel doctor, who, finding the hand acutely inflamed and the man apparently very ill, told him he must go into hospital, as an operation would be necessary. The man accordingly walked to the Norfolk and Norwich Hospital, a distance of about five miles, when two operations were performed, in spite of which he died from acute septicæmia.

METHYL ALCOHOL AND BLINDNESS.

THE tragedy reported from New York, in which a hundred or more persons lost their lives and many others their sight from drinking wood spirit, apparently in mistake for whisky, calls public attention to the exceedingly poisonous character of methyl alcohol. So long as wood spirit was a dark, evil-smelling liquid few were tempted to take it as a beverage, but as now purified it is scarcely distinguishable to the eye or to the nose from ethyl alcohol, and probably provides an agreeable diversion to the jaded palate. The danger has been foreseen for some time, and the National Committee for the Prevention of Blindness (130, East Twenty-second Street, New York) issued broadcast the following warning: "One teaspoonful of wood alcohol taken internally is sufficient to cause total blindness—a larger quantity often causes death. If you value your eyesight or your life, never use wood alcohol, denatured alcohol or medicated alcohol for drinking purposes. Pass this knowledge on if you would assist in reducing the fatalities which are occurring from this cause." The tragedy will not be all loss if it serves as an effectual reminder that any substitute for alcohol can only be taken at deadly personal risk.

PROPOSED NEW WELSH HOSPITAL.

Mr. H. Seymour Berry, J.P., of Merthyr, has offered to provide a site at Pontsarn, near Merthyr Tydvil, and spend £10,000 on temporary hospital buildings. He is also willing to give £10,000 towards the provision of a new permanent general hospital on condition that the public establish an endowment fund of £100,000.

A WAISTCOAT POCKET CALENDAR.

THE R. H. Heward Company, Twickenham, have published a convenient little calendar for the waistcoat pocket. It measures 2 inches by 1½, has a leather cover, and in addition to an almanack in bold type gives the dates of bank holidays, movable feasts, and postal information. The company state that they are willing to send one of these useful calendars to anyone who is interested in surgical instruments and appliances.

GERMAN HOUSING STRAITS AND SCHEMES.

THE Ministry of Health has issued a report prepared by what was once the Intelligence Department of the Local Government Board on the housing problem in Germany.[1] There matters have followed generally much the same course as in this country, but owing chiefly to the rapid growth of the German population in recent years, the shortage is even more acute than in Great Britain. The investigations undertaken by the Berlin District Sickness Society disclosed in many cases an appalling state of things. In 1917, for example, two-thirds of the persons visited were living in rooms with no through ventilation, and in a few cases the rooms had no windows; in 36 per cent. of the households an insufficiency of beds was reported. The report goes on to describe the methods that have been adopted so far in Germany to deal with these difficulties, and commends particularly the close attention which has been paid to the subject of town planning. The report is brought up to date by the inclusion of the most recent orders and proposals whose success or failure have yet to be demonstrated.

REDUCTION IN VAGRANCY IN WEST SUSSEX.

THE annual report of the West Sussex Casual Pauper Committee provides some remarkable figures. The principal feature of the operations of the committee is the issue of food tickets in order that the casual paupers may have no excuse for begging, and that this system has met with extraordinary success is shown by the figures just issued in the thirteenth annual report of the committee. Before the system of the committee came into operation no fewer than 19,599 casual paupers were relieved in 12 months (1906) in the county of West Sussex. The figure for the year just ended was 1729. The following shows the figures for each year since 1906, the year 1907 being the first year of the system's operation:—1907, 16,760; 1908, 15,579; 1909, 15,231; 1910, 12,575; 1911, 11,679; 1912, 11,967; 1913, 9109; 1914, 8285; 1915, 581?; 1916, 4095; 1917, 3422; 1918, 3428; 1919, 1729. It is evident that the operation of this system has brought about a rude change in the life of the habitual tramp, at least in the western half of the county of Sussex. It would be interesting to know what is the experience of other parts of the country—whether the elimination from West Sussex of these dangerous nomads has caused an unusual influx elsewhere. However, the work of the West Sussex committee is not to stop here. It is recorded in its report that the Inter-Counties Vagrancy Committee has determined upon the following: (1) The advisability of the establishment of labour colonies for vagrants; (2) appointment of an executive committee to carry out the resolutions of the committee; (3) the dealing with the discharged sailors and soldiers, on their applying for admission to the casual wards, on the lines passed by the committee; and (4) compilation of statistics of arrangements in connexion with the control of vagrancy made by the various vagrancy committees. The West Sussex committee is to be congratulated on the success of its labours in reducing in number a body whose picturesqueness has disappeared, and who must be a menace to the countryside.

[1] The Housing Problem in Germany. London: His Majesty's Stationery Office. 1919. Pp. 80. 1s.

WINDOW FATALITIES.

To the Editor of THE LANCET.

SIR,—An article entitled "Fatalities in Hospitals Caused by Patients Falling from Windows" (*Journal of the American Medical Association*, August 23rd, 1919, p. 604) tempts me to describe a scheme we have used in the More Hospital for a number of years to lessen the opportunities for delirious patients to escape from the hospital.

We installed a special enunciator in the main hall near the general service one. This special enunciator has a loud bell, differing in tone from the other. From this enunciator concealed wires extend to a small copper-plate in the baseboard near a corner in each room and ward. If a patient becomes delirious his bed is rolled into the corner of the room or ward, and an electric mat, about 3 ft. by 5 ft. in size, is placed in front of the bed and connected by wires to the copper-plate in the baseboard. Over this is placed a common rug. Any pressure, as a nurse or patient stepping on the rug, causes the bell attached to the special enunciator to ring, and is a warning to the nurses.

In a small hospital, especially, all nurses can be readily informed that there is a delirious patient in a certain room, and at the sound of the bell it is seldom necessary to go first to the enunciator to see where the call comes from. Our experience has been that the nurses are alert and respond promptly to this emergency call. I, myself, have been on the floor when the bell sounded, and have seen two or three nurses meet at the patient's bedside before he had time to leave the room. No delirious patients have escaped from the hospital or been injured.

I am, Sir, yours faithfully,

Eveleth, Minn. C. W. MORE, M.D.

CONVERTING GRAMMES INTO OUNCES.

To the Editor of THE LANCET.

SIR,—Following on my letter in THE LANCET of Oct. 25th, giving the formula and a mnemonic for converting ounces into grammes, I have been asked for a mnemonic for the formula for the reverse process—namely, grammes into ounces. The formula is, of course, multiply the grammes by ·03527. My mnemonic is "By five fairy figures ranged, Stop o Gramme for ounce be changed." (It might be entitled "The Fairy Change.") The "Stop o" recalls the decimal point and zero; and, counting the number of letters in the words "for ounce be changed," gives the sequence 3-5-2-7. Apart from this, the easily remembered figures 567 grammes equal almost exactly 20 ounces avoirdupois, and thence other proportions can be derived. I have never seen this mentioned anywhere. Also, for rough-and-ready purposes, if one thought of 456 grammes equalling a pound, it would afford a useful clue, as it is easily remembered and easily divisible into 228, 114, 57, 28½, 14¼, 7⅛—that is, down to a quarter of an ounce; and fine adjustments, if desired, can be made by the first-mentioned formulæ.

I am, Sir, yours faithfully,

London, Dec. 19th, 1919. F.

A FAVOURABLE SEQUEL TO THE INFLUENZA EPIDEMIC IN AMERICA.

THE industrial mortality records of the Metropolitan Life Insurance Company of New York City show that the health conditions during last autumn were the most favourable for years past. There were no signs of a recurrence of influenza, and the mortality from other diseases was at an unusually low point. Doubtless a large number of susceptible persons were carried off prematurely by the epidemic who would probably have died this year. At all events, no serious aftermath of the influenza epidemic of 1918 has yet appeared. The low death-rates among its policy-holders for the months of July, August, and September were followed by astonishingly favourable developments during October and November. Instead of the marked increase that is expected in these months, as compared with the summer months, the mortality in October was only very slightly in excess of that for September, and was much lower than the normal. Instead of the increase which is usually shown for November, the rate actually declined over 8 per cent. from the figures for October. A decrease of 16 per cent. in the death-rate for tuberculosis was recorded for November.

Pleximeter is entitled to claim abatement in his income-tax return in regard of the cost of tyres, petrol, repairs, and renewals for a car kept for professional purposes, as well as the wages and board of the chauffeur.